1-041A052 $50 New No (1)

12875
RECORDATION NO. Filed 1425

FEB 10 1981 -10 00 AM

INTERSTATE COMMERCE COMMISSION

No.

Date FEB 10 1981

Fee $ 50.

ICC Washington, D. C.

Interstate Commerce Commission
Washington, D. C.

Gentlemen:

Enclosed for recordation under the provisions of 49 USC 11303(a) are the original and three counterparts of a Restated and Amended Reconstruction Agreement dated as of January 1, 1981.

A general description of the railroad equipment covered by the enclosed document is set forth in Schedule A attached to this letter and made a part hereof.

The names and addresses of the parties are:

Owner: The Connecticut Bank and Trust Company
One Constitution Plaza
Hartford, Connecticut 06115

Rebuilder: Illinois Central Gulf Railroad Company
Two Illinois Center
233 North Michigan Avenue
Chicago, Illinois 60601

The undersigned is the Owner mentioned in the enclosed document and has knowledge of the matters set forth therein.

Please return the original and two copies of the Restated and Amended Reconstruction Agreement to James Markey, Esq., Chapman and Cutler, 111 West Monroe Street, Chicago, Illinois 60603.

Also enclosed is a check in the amount of $50.00 covering the required recording fee.

Very truly yours,

THE CONNECTICUT BANK AND TRUST
COMPANY, as Trustee under
I.C.G. Trust No. 81-1

By _____

Its ASSISTANT VICE PRESIDENT

OWNER AS AFORESAID

Enclosures

Courtesy of CT Kynard

SCHEDULE A

DESCRIPTION OF EQUIPMENT

ITEMS PRIOR TO RECONSTRUCTION:

3 GP-11 Diesel Locomotives Marked and Numbered
IC 9136, IC 9198, IC 9310

2 GP-26 Diesel Locomotives Marked and Numbered
GMO 502, GMO 514

16 SW-14 Diesel Locomotives Marked and Numbered
IC 1244, IC 1227, IC 412, IC 402, IC 1029A,
IC 1029B, IC 450, IC 468, IC 407, IC 409,
IC 413, IC 430, ICG 433, IC 434, ICG 437, ICG 438

ITEMS AFTER RECONSTRUCTION OR CONSTRUCTION:

3 GP-11 Rebuilt Locomotives Marked and Numbered
ICG 8751 through ICG 8753, both inclusive.

2 GP-26 Rebuilt Locomotives Marked and Numbered
ICG 2601 and ICG 2602.

16 SW-14 Rebuilt Locomotives Marked and Numbered
ICG 1449 through ICG 1464, both inclusive.

300 83-ton Open Top Hopper Cars Marked and Numbered
ICG 341100 through ICG 341399, both inclusive.

Matter No. 33779-0
Execution Copy

RESTATED AND AMENDED RECONSTRUCTION AGREEMENT

Dated as of January 1, 1981

Between

ILLINOIS CENTRAL GULF RAILROAD COMPANY

REBUILDER

and

THE CONNECTICUT BANK AND TRUST COMPANY,
as Trustee under I.C.G. Trust No. 81-1

OWNER

(I.C.G. Trust No. 81-1)
(21 Rebuilt Locomotives)

TABLE OF CONTENTS

RESTATED AND AMENDED RECONSTRUCTION AGREEMENT

THIS RESTATED AND AMENDED RECONSTRUCTION AGREEMENT dated as of January 1, 1981 is between ILLINOIS CENTRAL GULF RAILROAD COMPANY, a Delaware corporation (the "Rebuilder") and THE CONNECTICUT BANK AND TRUST COMPANY, a Connecticut banking corporation, not individually but solely as Trustee (the "Owner") under a Trust Agreement dated as of January 1, 1981 (the "Trust Agreement") with SEVENTEENTH HFC LEASING CORPORATION (the "Trustor").

R E C I T A L S:

A. The Trustor and Waterloo Railroad Company (the "Seller") entered into a Hulk Purchase Agreement dated as of December 1, 1980 (the "Hulk Purchase Agreement") pursuant to which the Trustor acquired 21 used locomotives (the "Hulks"). The Trustor further entered into a Reconstruction Agreement dated as of December 1, 1980 (the "Original Reconstruction Agreement") with the Rebuilder pursuant to which the Rebuilder agreed to reconstruct the Hulks in accordance with the Trustor's specifications. In accordance with the Original Reconstruction Agreement, the Rebuilder is currently reconstructing the Hulks.

B. Prior to its acquisition of the Hulks, the Trustor determined that it would prefer to create a trust to own the Hulks and to direct the Trustee to reconstruct the Hulks. Initially, however, it was temporarily impractical for the Trustor to create such a trust. After the execution and delivery of the Hulk Purchase Agreement and the Original Reconstruction Agreement, however, it became practical to create a trust and, in accordance with the structure of the transaction as originally planned, the Trustor and the Owner entered into the Trust Agreement pursuant to which the Trustor transferred and conveyed its right, title and interest in and to the Hulks and the Hulk Purchase Agreement to the Owner.

C. In order to provide for the continuation and completion of the reconstruction of the Hulks, the Owner (on the Trustor's behalf) and the Rebuilder now desire to restate and amend the Original Reconstruction Agreement by their execution and delivery of this Restated and Amended Reconstruction Agreement (the "Reconstruction Agreement") pursuant to which the Rebuilder agrees to reconstruct the Hulks in accordance with the Owner's specifications therefor set forth in Annex I of Schedule A hereto (hereinafter, with such modifications therein as may be approved by the parties hereto, called the "Specifications"), and the Owner proposes to pay for such reconstruction of the Hulks at the price, in the manner and upon the terms and conditions hereinafter provided.

Rebuilder at the delivery point or points mutually agreed upon by the Owner and the Rebuilder from time to time following the execution and delivery of this Agreement, but such delivery and acceptance for each Item of Equipment shall take place prior to the Outside Delivery Date provided in Section 3 hereof. The Rebuilder agrees that it will not accept for reconstruction, nor commence any reconstruction of, any Hulk if (i) the Rebuilder does not reasonably anticipate that such Hulk will be fully reconstructed prior to the Outside Delivery Date provided in Section 3 hereof, (ii) an Event of Default under the Lease, or an event which, with the lapse of time or the giving of notice, or both, would constitute an Event of Default thereunder, shall have occurred, (iii) there shall have been commenced any proceeding or there shall have been filed any petition under the Federal or any local bankruptcy or insolvency laws by or against the Rebuilder or any of its property, or (iv) the Owner or any Participant (as defined in the Participation Agreement) shall have delivered written notice to the Rebuilder that any of the conditions contained in Schedule B of the Hulk Purchase Agreement or Schedule B of the Original Reconstruction Agreement have not been satisfied or waived.

SECTION 3. OUTSIDE DELIVERY DATE.

The Rebuilder agrees that all Items of Equipment will be reconstructed and delivered prior to June 15, 1981 (the "Outside Delivery Date"). The Rebuilder's obligations to so reconstruct and deliver shall be absolute and unconditional, regardless of any events which might otherwise be deemed to constitute force majeure. In the event that the Rebuilder fails to perform such obligations, Section 11 hereof shall apply.

SECTION 4. INSPECTION AND ACCEPTANCE.

The Owner shall designate a representative to accept delivery of each Item of Equipment hereunder, which representative may be an employee of the Lessee. Notwithstanding the acceptance of an Item of Equipment hereunder by the Owner, all of the Rebuilder's obligations herein set forth shall survive delivery, including, without limitation, the obligation to rebuild the Hulks in accordance with the Specifications. From the time any Hulk is delivered to the Rebuilder until the delivery of the reconstructed Item of Equipment, the risk of loss with respect thereto shall be borne by the Owner, and the Owner shall be responsible for arranging for insurance coverage for such risk at its own expense.

SECTION 5. PAYMENT FOR RECONSTRUCTION OF EQUIPMENT.

The reconstruction cost for each Item of Equipment shall be the amount set forth on Schedule A hereto for such Item of Equipment (the "Reconstruction Cost"). The Reconstruction

D. The Owner and the Rebuilder, inter alios, have entered into a Participation Agreement dated as of January 1, 1981 (the "Participation Agreement").

E. Pursuant to a Restated and Amended Equipment Lease dated as of January 1, 1981 (the "Lease") the Owner will, upon completion of the reconstruction of a Hulk (such reconstructed Hulk being herein called an "Item of Equipment" and such items collectively herein called the "Equipment"), lease, as lessor, the Item of Equipment to the Rebuilder, as lessee.

NOW, THEREFORE, in consideration of the premises and of the covenants and agreements hereinafter set forth, the Owner and the Rebuilder hereby agree as follows:

SECTION 1. RECONSTRUCTION OF THE EQUIPMENT.

The Rebuilder agrees at all times under and pursuant to the instruction, direction and control of the Owner (i) to reconstruct the Hulks, in accordance with the Specifications, for the Owner, (ii) to number and mark each Item of Equipment with the road numbers specified with respect thereto in the Lease, (iii) to cause each Item of Equipment to be plainly, distinctly, permanently and conspicuously marked by a plate or stencil printed in contrasting colors upon each Item of Equipment in letters not less than one inch in height with the words "Leased from a Bank or Trust Company, as Trustee, and Subject to a Security Interest Recorded with the I.C.C.", and (iv) to deliver the Equipment to the Owner, as and when so reconstructed, marked and numbered, all for the Reconstruction Cost provided in Section 5 hereof. The Rebuilder warrants to the Owner that the design, quality and component parts of the Equipment as so reconstructed will conform to all applicable laws, to all United States Department of Transportation and Interstate Commerce Commission requirements and specifications, if any, and to all standards recommended by the Association of American Railroads reasonably interpreted as being applicable to railroad equipment of the character of the Equipment (as so reconstructed) as of the date of this Agreement, provided, however, that if any such requirements, specifications or standards are other than as set forth in the Specifications, the Rebuilder will consult with the Owner as to the appropriate changes to be made in the Specifications, which changes shall be subject to final approval of the Owner.

SECTION 2. TIME AND PLACE OF DELIVERY.

The Owner will, at its expense, deliver the Hulks, or cause the Hulks to be delivered, to the Rebuilder at the plant of the Rebuilder located at the rebuilding site identified in Schedule A hereto. The Rebuilder will deliver the reconstructed Equipment to the Owner for acceptance in the manner provided in Section 4 hereof with freight charges, if any, prepaid by the

Cost for each Item of Equipment shall be set forth in an invoice covering the respective Items furnished by the Rebuilder to the Owner on or prior to the Rebuilt Equipment Closing Date (as defined in the Participation Agreement) on which the Reconstruction Cost thereof is to be paid by the Owner, which invoice shall be accompanied by a statement of the Rebuilder setting forth its opinion to the effect that the Reconstruction Cost of the Items of Equipment covered thereby plus the Hulk Purchase Price (as defined in the Hulk Purchase Agreement) of the reconstructed Hulks covered by that invoice does not exceed the fair market value of such Items of Equipment. Subject to the fulfillment of the conditions in Schedule B of the Original Reconstruction Agreement, payment of the Reconstruction Cost for each Item of Equipment shall be made to the Rebuilder on the Rebuilt Equipment Closing Date therefor under the Participation Agreement by wire transfer of immediately available funds to such bank located in the United States as the Rebuilder shall designate by not less than five days' prior notice to the Owner in writing.

SECTION 6. RECONSTRUCTION WARRANTY.

THE OWNER MAKES NO WARRANTIES WHETHER WRITTEN, ORAL, STATUTORY OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE HULKS OR THE EQUIPMENT OR IN CONNECTION WITH THIS AGREEMENT OR THE DELIVERY AND SALE OF THE EQUIPMENT HEREUNDER. The Rebuilder warrants that the Hulks will be reconstructed in accordance with the Specifications and any changes thereto approved by the Owner and warrants the reconstructed Items of Equipment will be free from defects in material, workmanship and design under normal use and service, the obligation of the Rebuilder under this Section 6 being limited to making good at its plant any part or parts of any reconstructed Item of Equipment, which shall, within one year after the delivery of such reconstructed Item of Equipment to the Owner, be returned to the Rebuilder with transportation charges prepaid, and which upon examination by the Rebuilder, shall be disclosed to its reasonable satisfaction to have been thus defective. This warranty is expressly in lieu of all other warranties (other than waranties of subcontractors and suppliers which are hereby assigned to the Owner), express or implied, and of all other obligations or liabilities on the part of the Rebuilder except as herein provided, and the Rebuilder neither assumes nor authorizes any person to assume for it any other liability in connection with the reconstruction of the Equipment and delivery of the reconstructed Equipment except as aforesaid. The Rebuilder further agrees with the Owner that the acceptance of any reconstructed Item of Equipment hereunder shall not be deemed a waiver by the Owner of any of its rights under this Section.

SECTION 7. REPRESENTATION AND WARRANTY AS TO TITLE.

The Rebuilder represents that upon completion of the reconstruction of each Item of Equipment hereunder, at the time

of delivery and acceptance of such Item by the Rebuilder as lessee under the Lease, such Item will be free and clear of all liens and encumbrances of persons claiming by, through or under the Rebuilder, other than the right of the Rebuilder to be paid the Reconstruction Cost for such Item as herein provided and the liens and encumbrances created by the Owner and Trustor under the Operative Agreements (as defined in the Participation Agreement). The Rebuilder further warrants that it will pay and discharge any and all claims which might constitute or become a lien or charge upon such Item other than claims arising from, through or under the Owner or the Trustor unless the Rebuilder shall, in good faith and by appropriate legal proceedings, contest the validity thereof in any reasonable manner which will not, in the opinion of the Owner, affect or endanger the title and interest of the Owner to such Item. The Rebuilder's obligations under this Section 7 shall survive the completion of reconstruction and payment for the Equipment as provided herein.

SECTION 8. REBUILDER'S INDEMNITY.

The Rebuilder hereby agrees to indemnify and hold the Owner in both its individual and fiduciary capacities and the Trustor and the Note Purchaser (as defined in the Participation Agreement) and their respective successors, assigns, directors, officers and agents harmless from and against any and all losses, claims, liabilities and expenses which arise out of or relate to the ownership interest of the Owner in any Hulk during the period of reconstruction thereof or the reconstruction of such Hulk or any testing or other processing of such Hulk prior to acceptance of such reconstructed Hulk by the Rebuilder as lessee under the Lease (including claims for patent, trademark or copyright infringement in connection with the reconstruction of such Hulk as provided herein and claims for strict liability in tort).

SECTION 9. INSURANCE.

The Rebuilder will at all times while it is in control or possession of such Hulks or engaged in reconstruction of Hulks under this Agreement and until all such reconstructed Hulks have been delivered to the Owner, at its own expense, cause the Hulks to be insured, as to public liability insurance, in the same manner and to the same extent as if such Hulks were subject to the public liability insurance provisions of Section 11 of the Lease, and evidence thereof shall be furnished as provided in the Lease.

SECTION 10. RIGHT OF INSPECTION.

During reconstruction, including, without limitation, all phases of fabrication and assembly, the Hulks and all work thereon shall be subject to inspection and approval by the Owner, the Trustor, the Security Trustee and the Note Purchaser; provided, however, that any inspection or failure to inspect by any such party shall not affect any of their respective rights hereunder. The

Rebuilder shall grant to the authorized inspectors of each such party access to all portions of its plant where Hulks are being reconstructed.

SECTION 11. FAILURE TO RECONSTRUCT.

In the event that, following delivery and payment for the Hulks, no Hulk shall be reconstructed and accepted pursuant to this Reconstruction Agreement and the Lease, then the Rebuilder agrees to pay (or to reimburse the Trustor to the extent that the Trustor has paid) all expenses relating to this Agreement and the transaction contemplated hereby and by the Participation Agreement (except insofar as the Participation Agreement refers to the New Equipment). If and to the extent that any Hulks are not reconstructed and accepted pursuant to this Reconstruction Agreement and the Lease on or before June 15, 1981 (the "Non-completed Hulks"), the Rebuilder agrees, upon receipt of written instructions to such effect from the Owner and as agent for the Owner, to sell the Non-completed Hulks to a party other than the Rebuilder or any affiliate of the Rebuilder, on or before July 1, 1981, at the highest cash price obtainable. On July 1, 1981, the Rebuilder will pay to the Owner the Net Proceeds from such sale and, if such Net Proceeds (as defined below) are less than the Aggregate Hulk Purchase Price (as defined below) plus interest thereon at the Prime Rate (as defined in the Notes) for the period from and including the date of purchase of such Noncompleted Hulks to but not including July 1, 1981, the Rebuilder will, as liquidated damages for failure to complete the reconstruction of the Non-completed Hulks as provided in this Reconstruction Agreement, pay to the Owner on July 1, 1981, an amount equal to the difference; provided that all rights of both the Rebuilder and the Owner in and to the Non-completed Hulks and the proceeds thereof shall be subject and subordinate to the prior right, title and interest therein of the Security Trustee under the Security Agreement. The Owner agrees to furnish to the Rebuilder all such bills of sale, without recourse or warranty, as shall be reasonably required to enable the Rebuilder to effect the sale of the Non-completed Hulks for the account of the Owner as aforesaid. For purposes of this Section only, "Aggregate Hulk Purchase Price" shall mean the sum of the respective Hulk Purchase Prices for each Non-completed Hulk and "Net Proceeds" shall mean gross sales proceeds less selling expenses less, to the extent Net Proceeds are not reduced below the Aggregate Hulk Purchase Price plus interest thereon as described above, the Rebuilder's reasonable Reconstruction Cost plus a reasonable overhead factor (such latter deduction being hereinafter referred to as the "Rebuilder's Portion of the Gross Proceeds"). The Owner agrees that the Rebuilder's Portion of the Gross Proceeds, if any, shall be paid promptly to the Rebuilder.

SECTION 12. LIMITATIONS ON LIABILITY.

Anything herein to the contrary notwithstanding, the Owner shall have no obligation to pay for the reconstruction of the Equipment unless funds sufficient for such purposes have been

no assignment by the Rebuilder or any assignee thereof shall subject any assignee to, or relieve the Rebuilder from, any of the obligations of the Rebuilder hereunder. Each party hereto may conclusively assume that there has been no assignment of the other party's rights under this Agreement unless and until it shall have been notified in writing of any such assignment by such assignor.

SECTION 15. LAW GOVERNING.

This Reconstruction Agreement shall be construed in accordance with the laws of the State of Illinois.

SECTION 16. EXECUTION IN COUNTERPARTS.

This Agreement may be executed in several counterparts, each of which so executed shall be deemed to be an original, and such counterparts together shall constitute but one and the same instrument.

SECTION 17. ORIGINAL RECONSTRUCTION AGREEMENT.

The Original Reconstruction Agreement shall be deemed to have been amended in its entirety by substitution of all the provisions hereof, other than this Section 17, for all of the provisions thereof.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective officers thereunder duly authorized as of the day and year first above written.

ILLINOIS CENTRAL GULF RAILROAD COMPANY

(Seal)

Attest:

Assistant Secretary

By

Its Vice President

REBUILDER

THE CONNECTICUT BANK AND TRUST COMPANY, as Trustee under I.C.G. Trust No. 81-1

(Seal)

Attest:

~~Assistant Secretary~~
ASSISTANT VICE PRESIDENT

By

Its Authorized Owner

OWNER

STATE OF CONNECTICUT)
) SS
COUNTY OF HARTFORD)

On this 6th day of February, 1981, before me personally appeared DONALD E. SMITH, to me personally known, who being by me duly sworn, says that he is an Authorized Officer of THE CONNECTICUT BANK AND TRUST COMPANY, that one of the seals affixed to the foregoing instrument is the corporate seal of said corporation, that said instrument was signed and sealed on behalf of said corporation by authority of its Board of Directors, and he acknowledged that the execution of the foregoing instrument was the free act and deed of said corporation.

Sheree M. Daniels
Notary Public
SHEREE M. DANIELS
NOTARY PUBLIC
MY COMMISSION EXPIRES MARCH 31, 1985

[NOTARIAL SEAL]

My commission expires:

STATE OF ILLINOIS)
) SS
COUNTY OF COOK)

On this 4th day of February, 1981, before me personally appeared D. E. Konker, to me personally known, who being by me duly sworn, says that he is a Vice President of ILLINOIS CENTRAL GULF RAILROAD COMPANY, that one of the seals affixed to the foregoing instrument is the corporate seal of said corporation, that said instrument was signed and sealed on behalf of said corporation by authority of its Board of Directors, and he acknowledged that the execution of the foregoing instrument was the free act and deed of said corporation.

Virginia M. Alexander
Notary Public

[NOTARIAL SEAL]

My commission expires:
May 4, 1984

advanced by the Trustor and the Note Purchaser. Each and all of the representations, warranties, undertakings and agreements herein made on the part of the Owner are made and intended not as personal representations, warranties, undertakings and agreements by The Connecticut Bank and Trust Company for the purpose or with the intention of binding it personally but are made and intended for the purpose of binding only the Trust Estate as such term is used in the Trust Agreement and this Reconstruction Agreement is executed and delivered by the said bank not in its own right but solely in the exercise of the powers expressly conferred upon it as trustee under the Trust Agreement; and except in the case of wilful misconduct or gross negligence by said bank or the Trustor, as the case may be, no personal liability or personal responsibility is assumed hereunder by or shall at any time be enforceable against the said bank or the Trustor, as the case may be, on account of any representation, warranty, undertaking or agreement hereunder of the Owner or the Trustor, as the case may be, either express or implied, all such personal liability (except as aforesaid), if any, being expressly waived by the Rebuilder and by all persons claiming by, through or under the Rebuilder; provided, however, that the Rebuilder or any person claiming by, through or under it, making claim hereunder, may look to said Trust Estate for satisfaction of the same.

SECTION 13. NOTICES.

Any notice to be given by either party hereto to the other shall be in writing and shall be deemed to have been duly given when delivered personally or otherwise actually received at the following addresses:

If to the Rebuilder: Illinois Central Gulf Railroad Company
Two Illinois Center
233 North Michigan Avenue
Chicago, Illinois 60601
Attention: Treasurer

If to the Owner: The Connecticut Bank and Trust Company
One Constitution Plaza
Hartford, Connecticut 06115
Attention: Corporate Trust Department

(With copies to the Trustor at its address specified in the Participation Agreement)

or at such other address as such party shall hereafter furnish to the other party in writing.

SECTION 14. SUCCESSORS AND ASSIGNS.

References to any party herein shall be deemed to include the successors and assigns of such party; provided, however, that

ANNEX I
TO DESCRIPTION OF EQUIPMENT

Specifications for Reconstruction

The design, quality and component parts of the Equipment as reconstructed will conform to all applicable United States Department of Transportation and Interstate Commerce Commission requirements and specifications, if any, and to all standards recommended by the Association of American Railroads reasonably interpreted as being applicable to railroad equipment of the character of the Equipment (as so reconstructed) as of the date of the Reconstruction Agreement and to the further specifications as set out in the pages attached hereto.

DESCRIPTION OF EQUIPMENT

Reconstruction Specifications: See Annex A hereto

Outside Delivery Date: June 15, 1981

Location of Rebuilder's Plant: Paducah, Kentucky

Number of Items	Description of Hulk	Description of Rebuilt Units	Reconstruction Cost per Item	Aggregate Reconstruction Cost
3	GP-11 locomotives marked and numbered as follows: IC 9310, IC 9198, IC 9136	ICG 8751-ICG 8753, both inclusive	$459,100	$1,377,300
16	SW-14 locomotives marked and numbered as follows: IC 1244, IC 1227, IC 412, IC 402, IC 1029A, IC 1029B, IC 450, IC 468, IC 407, IC 409, IC 413, IC 430, ICG 433, IC 434, ICG 437, ICG 438	ICG 1449-ICG 1464, both inclusive	390,100	6,241,600
2	GP-26 locomotives marked and numbered as follows: GMO 502 and GMO 514	ICG 2601 and ICG 2602	459,100	918,200
				$8,537,100

SCHEDULE A
(to Reconstruction Agreement)

SPECIFICATIONS

P.O. _____ SHOP ORDER _____

DATE Original December 1978
Revised March 1980

ICG 8700 Series

FOR ILLINOIS CENTRAL GULF RAILROAD

REMANUFACTURE GP UNITS TO GP-11

UNITS 8727 AND LATER

- INDEX -

(1)

(1) Revision 7/1/80 (delete Search - file 1293(872-137)

- INDEX -

(1) Revision 4/15/80 (to change to 18 KW Aux. Gen.)
(2) Revision 11/20/80 (to delete model designated - listed in General Data & MG section)

GENERAL DATA

		GP-7-9
	MODEL	ICG GP-11
	HORSEPOWER	1850 ± 50
	ENGINE	645C
(3)	MAIN GENERATOR	D22B-D14
(1)	AUXILIARY GENERATOR	18 KW
	TRACTION MOTOR	D47 (MINIMUM)
	AIR BRAKE	26-L UNIPLATE
	SAND CAPACITY	36 CU. FT.
	FUEL CAPACITY (U. S. GALLONS)	1600 to 1750
	COOLING WATER (U. S. GALLONS)	230
	LUBE OIL (U. S. GALLONS)	200
(2)	GEAR RATIO	62/15 or 60/17

(1) Revision 4-15-80 (To change to 18 KW Aux. Gen.)
(2) Revision 6/11/80 (To conform to practice)
(3) Revision 11/20/80 (To denote rewinding of armature and frame)

Main Frame

1. Strip - sandblast.
2. Inspect for cracks and damage:
    a. Draft gear pockets
    b. Center castings
    c. Air ducts
    d. Fuel tank supports
3. Repair all damaged and worn areas.
4. Check and straighten as required.
5. Inspect mounting pads for engine, main generator, equipment rack and air compressor.
6. Install all new channel type handrail stanchions - as required.
7. Renew all underframe piping less than 3/4" I.P.S. with rigid copper tubing.
8. Inspect for damage and wear under clamps (renew as required) air compressor discharge piping, brake cylinder piping to trucks, brake pipe and main reservoir trainline piping.
9. Rework in kind or install new uncoupling levers - per FRA side step Rule 231 as required.
(1) 10. Rework all bent endplates and modify per Dwg. _____.
11. Install snowplow pilot per Dwg. 8111 - front end.
12. Install pilot plate per Dwg. 7900 - rear end.
13. Rework all corner steps - install per FRA side step Rule 231 as required, Dwg. D-100273.
14. Modify skirts - provide panel for electric emergency fuel shut-off button.
15. Renew traction motor underframe leads.

(1) Revision 11/20/80 (to add Dwg. No.)

Main Frame - Continued

16. Install PPC 12222 tri-headed 27 point trainline jumper cable - M.U. receptacle on end plates per Dwg. 8372 - delete all other trainline receptacles.

17. Install Neoprene traction motor cable cleat B-14125, furnished by URE Service.

(2) 18. Install anti-climb per Dwg. 8372 on front end and reworked hinged ramp on rear end.

(2) 19. Install handrail arrangements with bendaway support assemblies, 9092561 and 9092562, at each end per Dwg. _____.

20. Install insulated cable cradle under ramp, 8472802.

21. Delete concrete block - ballast with steel knockouts or slabs - see locomotive weight.

22. Install toilet drain with floor flange (Vapor 17190156 or Automatic Equipment 976-4-1) and quick disconnect (Vapor 71790100 or Automatic Equipment 976-4-6).

23. Install floor drain in toilet compartment with "drop-in" loose fitting plug and chain per Dwg. 8291.

24. Install single traction motor blower air duct per Dwg. 8252.

25. Install aspirator drain in main generator sump, Dwg. 8290.

26. Modify main generator well for sealed off partition.

27. Install light on step skirt to focus on bottom step at each corner per Dwg. B-100485.

28. Install high voltage cabinet air filter housing, 8458504.

29. Install chain box on R side under belt rail per Dwg. C51145.

30. Install rerailer hangers on both sides of locomotive below belt rail per Dwg. D-52581.

(1) 31. Install floor plate over sump in area behind the high voltage cabinet per Dwg. 8602.

(2) 32. Pipe engine air box drains below frame using aeroquip hose - must not drain on or between rails.

(1) Revision 5/13/80 (to protect cables)2

Fuel Tank - 1600 to 1750 Gallon

1. Remove existing tank. If it qualifies for reuse (1600 to 1750 gal.), perform the following items 2 - 9.
2. Cut open top of tank.
3. Inspect interior for loose or worn plates, for cracks, and any other possible damage.
4. Thoroughly clean interior of tank.
5. Reweld tops back in position, test tank for leaks and insure that all water is removed.
6. Install fuel level gauges, dial type, Qualitrol 031-007-01 (8243420).
7. Install 2 each fuel tank vent filters, Farr B-36272, with cartridge B-36253.
8. Install fuel tank drain valve per Dwg. 7323.

(3)(2) 9. If necessary, relocate vent piping to area at right rear corner of engine per dwg._____ - must not drain on or between rails. Delete flame arrester.

gallon tank per Dwg. T-50185.

(1) 10. Install qualified or new Houston fuel fill coupler, H-1023; and cap, H-1024; with new screen, 8062960.

Draft Gear - Coupler

1. Dismantle, clean and inspect for cracks, wear and damage. Weld and machine back to standard - yoke and coupler as required.
2. Renew all pins and bushings.
3. Renew all rubber pads.
4. Draft gear M-380A type - gear and yoke assembly, 8219282.
5. Coupler - "E" type with alignment control, 8219072.
6. Rework coupler carrier.

(1) Revision 5/13/80 - (to reflect ICG practice)
(2) Revision 6/11/80 - (to drain outside of rails)
(3) Revision 8/14/80 - (delete flame arrester per PED's letter of 7/15/80)

Cab - Short Hood (Low Nose)

1. Strip and remove cab and short hood.
2. Manufacture new cab using old sub base if possible.
3. Modify short hood to low nose per Dwg. 8156 - shorten nose to 76".
4. Install low nose to cab.
5. Relocate cab 24" toward front end from original position.
6. Install Salem 629-000 metal cab awnings.
7. Rework or renew cab doors, 9089628, with safety hooks for both doors.
8. Install rubber door bumpers, 8024232, to prevent doors from contacting handrails.
9. Install Salem wind deflectors - both sides:

   No. 652 with mirror - front
   No. 650 w/o mirror - rear

10. Install handhold L front of nose per Dwg. B-100182.
11. Rework battery box doors:

    a. Hinge with brass pins
    b. Battery tray rack with removable front bar

12. Install outside access door to sand traps.
13. Rework sand box fill covers and screens.
14. Install new square style sand box per Dwg. 8157.
15. Partition nose area for toilet compartment and water cooler alcove with door in between per Dwg. 8156.
16. Install floor to nose steps with handrail.
17. Install collision posts front wall of low nose adjacent to sand box.
18. Install new rag box.
19. Renew conduit as required.
20. Install all new wiring.

Cab - Short Hood (Low Nose) - Continued

21. Install 1" Benelex flooring.

22. Install rail mounted cab seats - one on engineer's side - 2 on fireman's side - with a stop on fireman's side to prevent seat from contacting heater.

23. Install new insulation and ceiling sheets:

    a. In cab
    b. Top and sides of water cooler alcove
    c. Wall and door between toilet compartment and alcove area

(1) 24. Install FRA Part 223 certified glazing - Type I for front and rear facings, J. T. Nelson Co. NV-916; Type II polycarbonate for unitized side units (Dwg. B100632 Rev. B), J. T. Nelson Co. 35025.

25. Install one piece arm rest, 8314268.

26. Install modulite number box per Dwg. 8266.

27. Install PPC 11200 oscitrol emergency red headlight on number box.

28. Install headlight, 8218906, on low nose.

(2) 29. Install headlight resistors, 8425858 - headlight voltage should be Dim 14 + 1 volts, Medium 22 + 1 volts, Bright 30 + 1 volts.

30. Install new style class lights, 8355678.

31. Install cab ceiling lights, 9096838.

32. Install electric cab heat. Required items:

    1 each - PM-5006-6 Heater (Fireman's side)
    1 each - PM-5006-4 Heater (Engineer's side)
    2 each Prime PM-5002 Auxiliary Heaters
    2 each 8458724 Circuit Breakers 30A
    2 each 8414231 Circuit Breakers 50A
    2 each 8298939 Switches
    2 each 8469858 Name Plates
    1 each 9505334 Hose
    2 each 8166524 Clamps

33. Install Barco SIS-800 speed indicator.

34. Install AAR console controller.

(1) Revision 7/1/80 (to use polycarbonate for side windows)
(2) Revision 8/14/80 (to change settings per file copy 872-137)

Cab - Short Hood (Low Nose) - Continued

(1) 35. Install cab accessories:

a. Federal card holder - PPC 12182

b. Flag, fusee, torpedo holder - PPC- 50026-14
c. Dry chemical holder - PPC-11433
d. 24 hour trip inspection holder - PPC-11437
e. Fire extinguisher
f. Decal "Procedure for Starting and Shutting Down Diesel Engine"

36. Install clean cab features per Dwg. 8264:

a. Pull handle and rubber hinge guard for cab doors, kit 9087001
b. Head bump pads - 2 each 9312193 and 1 each 9312229
c. Rounded unitized sash latches, kit 9099940
d. Rubber horn grip - 9099039
e. Padded sun visor - 93331382
f. Plastic wiper motor covers - 5 ea. 9319901 - 1 ea. 9088464
g. Rubber grip for wiper motor handle - 9088089

37. Install emergency brake valve in recess in L front cab wall.

38. Install water cup dispenser per Dwg. 8265.

39. Install Salem 672-100 ventilator on R of locomotive in vertical position - one in toilet compartment and one in alcove area per Dwg. 8156.

40. Install 2 coat hooks on the front of the HVC - top center door per Dwg. 8264.

(1) Revision 5/13/80 - (35b no longer needed - 35c to correct P/N)

Carbody - (Long Hood)

1. Remove hood - strip out all components.
2. Sand blast.
3. Qualify or renew all door hinges.
4. Qualify or renew all door latches.
5. Rework shutter assemblies and mechanism - modify to fail open.
6. Rework shutter screens.
7. Inspect and clean out radiator compartments.
8. Inspect and renew all rusted out sections.
9. Install roof hatches for power assembly change-out.
10. Manufacture hatch over prime mover for 4 exhaust stack arrangement.
11. Install new square style sand boxes per Dwg. 8157 with outside access doors to sand traps.
12. Rework sand box fill covers and screens.
13. Delete winterization hatch and install fan guard, if applicable.
14. Install bolted strips at panels near main generator and air compressor for blower and air compressor removal.
15. Install Farr engine air filter system, 68236 (formerly L-60726) single stage dyna cell with 8 each C-55445-1 cartridge.
16. Provide louvers for and install carbody filters (15) per Dwgs. 8327 and 8328.
17. Install "bubble" for traction motor blower air duct per Dwg. 8293.
18. Modify number lights for modulite panels per Dwg. 8390.
19. Install bulkhead, separating engine room from main generator compartment.
20. Remanufacture hand brake "in kind".

Carbody - (Long Hood) - Continued

21. Install aeroquip radiator vent hoses.
22. Install new conduit as required.
23. Renew all wiring.
24. Install new style class lights, 8355678.
25. Install new Salem Magnet valve for sanding.
26. Install headlight, 8218906.
(1) 27. Install headlight resistor, 8425858 - headlight voltage should be approximately (Dim) 12.7 V, (Med.) 17.0 V, (Bright) 31.0 V.
28. Apply putty, sand, clean and prime.

(1) Revision 6/11/80 (correct P/N)

Radiators - 6" Cores

1. Dismantle all radiator sections.
2. Rod out and clean all cores in vat.
3. Test core submerged in water tank with air pressure.
4. Leaking cores are re-soldered.
5. Fins are straightened.
6. Check for loose fins.
7. Side plates are repaired and soldered as required.
8. Delete radiator header screens.
9. Cores are re-assembled with roto blasted heads and straps.
10. Renew all gaskets.
11. Water hydro assembled radiator section at 50 - 60 PSI.
12. Apply re-manufactured date tag.

Trucks - 62/15 Gear Ratio

1. Dismantle - sandblast frame - bolster, spring plank.
2. Sandblast or roto blast - swing hanger, brake hangers and brake rods.
3. Visually inspect frame for cracks and worn areas.
4. Tram frame.
5. Weld and grind pedestal jaws as required.
6. Weld redrill traction motor support lug.
7. Renew all pins and bushings.
8. Renew all worn wear plates.
9. Install tested and matched coil springs.
10. Install new nylatron pedestal liners and fasten with huck bolts.
11. Install reworked and tested or new elliptical springs.
12. Install reworked brake cylinders.
13. Magna-flux swing hanger and renew bushings.
14. Rework brake hangers.
15. Modify outside top brake hanger pin boss if small hole, for clasp brake arrangement.
16. Install reworked journal boxes.

(1) 17. Delete

18. Rework or install new quik-just slack adjusters.
19. Rework gear cases, renew all seals. Fasten gear cases with huck bolts. Gear cases that are scrap will be replaced with new or reworked.
20. Install traction motor support bearing oil fill cap, 9333024.
21. Adjust coil spring shims for maximum locomotive height.
22. Install axle drive and cable, Barco 05490-06, on right #2 journal.

(2) 23. Install new dual seal support bearings and seals (ref. EMD Pointer 8-18-80 for appropriate part numbers).

(3) 24. Install UTEXed wick lubricators, 8277771.

(1) Revision 6/11/80 (delete duplicate)
(2) Revision 11/20/80 (per M.D.& P.S. agreement of 10-21-80)

Axles - Wheels 62/15 Gear Ratio

1. Reflectoscope axle.
2. Magnaglo inspection on gear.
3. Renew inner races as required.
4. Renew water guards as required.
5. Polish and roll support bearing area - turn if necessary.
(1) 6. Mount new 40" wheels - AAR D-40 Class B using boiled linseed oil - Spec. ANSI/ASTM D260.
7. Install new axles only as required.

Journal Boxes - Hyatt

1. Dismantle and clean all parts.
2. Renew all worn or defective parts.
3. Renew all seals and gaskets.
4. Rotate outer race.
5. Inspect and renew thrust block as required.
6. Chamfer wear plates top and bottom.
7. Install oil fill cups, EMD 9333024.

(1) Revision 4-15-80 (Danielwicz 3-27-80 File 351-6)

Elliptical Springs

1. Clean in hot tank.
2. Inspect for defects.
3. Check free height.

   If springs fail inspection or free height check - following must be done:

   a. Cut band
   b. Reset leaves or manufacture new
   c. Quench and temper leaves
   d. Reband with new band
   e. Test spring

Equipment Rack

1. Modify or manufacture new frame for 7-element lube oil filter tank.
2. Install 7-element lube oil filter tank, 9096754, with elements 8345482.
3. Install large sock type primary fuel filter - EMD 9502100.
4. Install fuel strainer EMD No. 8341983 -(includes element 9324489).

(2) (1) 5. Install fuel oil heater, 9517269, with thermostatic mixing valve, 9091415, per Dwg. _____. (Note: No manual valves in line) (Note: 8751 - first unit equipped with this heater - previous units had Vapor heaters).

6. Renew all O.D. copper tubing and large pipe only as required.
7. Manufacture and install temperature control switch manifold.
8. Install Sunstrand temperature control switches with (3) pole plug - 8324136:

	SW	Sunstrand P/N	Close	Open
If 2 fan	(TA	975-0485-003	160°	150°
	(TB	975-0485-005	170°	160°
	(ETS	975-0485-011	200°	190°
If 4 fan	(TA	975-0485-007	180°	170°
	(TB	975-0485-006	175°	165°
	(TC	975-0485-005	170°	160°
	(TD	975-0485-008	185°	175°
	(ETS	975-0485-011	200°	190°

(1) 9. Modify water tank for pressurized system; install 7 PSI pressure cap, PPC6213. If new tank is required, manufacture per dwg._____.
10. Install prime/start switch, 8441983.
11. Install remanufactured lube oil cooler.
12. Renew conduit as required.

(1) Revision 8/14/80 (5. to change type of heater) (9. to specify shop made replacement/ 2

(2) Revision 11/20/80 (to specify 1st unit equipped with new

Lube Oil Coolers - 8250727

1. Dismantle assembly.
2. Clean grease and sludge from all cores.
3. Rod out tubes and clean cores in vat.
4. Test core submerged in water tank with air pressure.
5. Leaking cores are re-soldered.
6. Fins are straightened.
7. Check for loose fins.
8. Apply remanufacture date tag to core.
9. Degrease heads and all other parts.
10. Inlet baffle modifications are made per EMD M.I. 9505 if required.
11. Coolers reassembled with rebuilt cores.
12. Renew all gaskets.
13. Water hydro test complete assembly at 80 PSI.

Engine - Model - 16-645-C

1. Strip and clean in hot tank.
2. Check "A" frame line bore.
3. Inspect crankcase for cracks and worn areas.
4. Inspect thrust collar surfaces.
5. Inspect serrations.
6. Spot face main bearing caps for hardened flat washer.
7. Paint crankcase and oil pan, with sealer.

(1) 8. Inspect lower liner inserts; renew only if loose, split, or worn.

9. Tap all bolt holes - any that do not qualify, install new thread inserts - RKK - furnished by Tridair Industries.
10. Renew all gaskets and seals.
11. Dismantle, clean, inspect, renew all worn parts, seals and gaskets:
    a. Water pumps
    b. Lube oil pumps
    c. Blowers - test run for one (1) hour

(2) d. Crankcase protector, 8464678 - Refer to EMD M.I. 259. Adjust the reset limits to 60" H_2O - ref. Pointer 10-13-80.
    e. Oil separator
    f. Governor - Overspeed trip setting set at 920-935 RPM (for 835 RPM 8th notch speed setting)
    g. Governor drive
    h. Injectors
    i. Fuel filters
    j. All gears
    k. Harmonic balancer
    l. Accessory drive gear

(1) Revision 8/14/80 (to specify possible reuse)
(2) Revision 11/20/80 (per RWL per EMD pointers)

Engine - Model - Continued

m. Lube oil relief valve

n. Cylinder relief valves

o. Auxiliary generator drive assembly

12. Power Assemblies - dismantle, clean and rework:

a. Cylinder heads - inconnel valves

b. Pistons - Koppers or EMD rings

c. Liners - reworked cast iron or chrome plated

d. Connecting rods

e. Carriers

f. Wrist pin

g. Rocker arms

h. Valve bridges

i. Cylinder head, overspeed trip mechanism, injector control linkage

(1) 13. Crankshaft - Qualified Steel or Chrome Plated (D or E Class):

a. Remove all plugs and clean oil passages

b. Magnaglo inspection for cracks

c. Measure all journals

d. Inspect and polish all journals

e. Install qualified steel or chrome plated shaft

f. Install new main bearings

g. Install new connecting rod bearings

h. All journals must be standard dimensions

i. Bolt on stub end - as required

j. Inspect oil slinger

(1) Revision 11/20/80 (per JDJ's letter 10-30-80)

Engine - Model - Continued

14. Install rework:
    a. Overspeed trip housing
    b. Front and rear housing
    c. Top deck frames
    d. Top deck covers
15. Clean, inspect rework camshafts:
    a. Polish all journals and cams
    b. Check run out
    c. Renew all bearings
16. Apply reworked or modified idler gear stubshaft (refer to Dwg. 8575 and EMD Pointer 2/25/66). If new stubshaft is required, use 8484128.
17. Renew all idler and blower drive gear bushings.
18. Layshaft:
    a. Inspect and straighten - remove burrs
    b. Spray weld, grind and polish all worn areas
19. Oil pan:
    a. Clean and inspect for cracks and damage
20. Rework all handhold covers.
21. Water hydro test engine.
22. Check "P" pipe alignment.
23. Set injector racks.
24. Set injector timing.
25. Set exhaust valves.
26. Apply data badge plate.
27. Apply injector timing badge plate.

Engine - Model - Continued

28. Reinstall same water manifolds and jumper lines, weld braces between cylinder 4 & 5 and 13 & 14.
29. Take cylinder head clearance lead readings.
30. Fill out all engine rebuild data sheets.
31. Load test engine in test cell per instructions in JTJ's letter of August 23, 1977. File 1200-99-9.

Exhaust System

1. Clean manifolds and inspect for cracks.
2. Install Farr spark arrestor Kit No. L-41411.
3. Modify manifolds for four (4) stack arrangement.
4. Cut (split) exhaust leg base and check for straightness.

Air Brake Schedule - 26-L

1. Install NYAB unirack.
2. Air brake schematic piping without safety control - Drawing 8296.
3. 26-F control valve.
4. Ball type vented 1-1/4" angle cock on brake pipe trainline, EMD 841261.
5. Delete brake cylinder quick release valve N-8306 with 1/4 orifice in exhaust.
6. Salem air gauge test fittings installed at the following:
   a. Main reservoir gauge - use 775.
   b. Air compressor control switch - use 775-3.
   c. Emergency sand switch - ESS - use 775-3.
   d. Pneumatic control switch PCS - use 775-3.
7. Install compression fittings on all copper tubing.
8. All train line air piping cut-out cocks are to be ball type-locking handle.
9. All trainline air piping less than 3/4 IPS must be rigid copper tubing.
10. KM-2 vent valves - NYAB 705435.
11. Install blanking plate 750868 in lieu of P-2-A.
12. Install brake valve exhaust pipes through floor - Drawing 8144.

(1) Air Compressor - WBO with new RM base

1. Dismantle and clean all parts.
2. Renew all bearings.
3. Renew all seals and gaskets.
4. Renew piston rings.
5. Install Triangle drilled HP connecting rod - new wrist pins as required.
6. Install EMD Compressor Sediment Removal Kit - 8498379.
7. Remanufacture cylinder head assemblies.
8. Install cast iron cylinder liners honed to standard size - install sleeved liners as required.
9. Remanufacture intercooler.
10. Install new shims and check crankshaft lateral.
11. Install dip stick, PCC 10617.
12. Fiberglass filter EMD 8402067 - or equivalent.
13. Install aeroquip quick-disconnect fitting 5602-4-4 for checking oil pressure.
14. Install Triangle full-flow oil system:
    a. Oil pump/filter kit - 65511 (for low base type) or kit - 65512 (for RM base type)
    b. Crankshaft with 180° conversion on oil pump eccentric
    c. LP Piston - 6344)
       HP Piston - 6342) Includes complete ring set - 6604

    Note: Return crankshaft and oil pump to Triangle for modification.
15. Load test four (4) hours.
16. Install on locomotive and install water piping per Dwg. L-1258 using 2 each 3-way valves NYAB 705690 (N-9852).
17. Install qualified coupling drive, 8236433, with qualified or new rubber joints, 8234958.

(2) 18. Replace crankcase breather valve assembly with reed type, 9419501.

Main Reservoir

1. Main reservoir piping schematic - Drawing SK-8060.
2. Remove, clean and inspect.
3. Reservoirs are to be drilled according to FRA Rule 206 (c).
4. Remanufacture safety valve or install new J-1 type, set 146-148 PSI.
5. Install horizontal check valve, crane 76E, 150 lbs. with 1/4" orifice in main reservoir equalizing trainline.
6. Salem 580-H drain valves on both main reservoirs.
7. Salem 818-1-20 auxiliary air filter.
8. Salem 824-1-50 filter to brake system.

(1) 9. Install diffuser tube assembly, 8144052, at the inlet flange and tube assembly, 8144051, at the outlet flange of each reservoir tank.

(1) Revision 9/17/80 (per D. D. Moore)

Sanding - Electric

1. Sanding piping schematic, Drawing SK-8061.
2. Install Salem 277-2 sand traps - outboard sanding only.
3. Delete inboard sanders.
4. Install Salem 500-BS control valve.
5. Remove all old trainline sanding air piping.
6. Sand capacity - 16 cubic feet per tank.

Air Horn

1. Install Nathan three (3) chime P-14R2.
2. Mount on top of cab.
3. Modulating horn operating valve 8318019 with vertical handle 9099639.
4. Renew horn mounting (rubber) pad, 8185843.

Crossing Bell

1. Install bell, left side long hood.
2. Install Salem 506 double-acting bell ringer.
3. Install in control stand, Salem 316-1A bell valve.

Hand Brake

1. Remanufacture "in kind", 8191508.
2. Install chain trough per Dwg. D-52683.

High Voltage Electrical Cabinet

1. Manufacture new frame, Drawing 8341 - wiring schematic.
2. Rework copper buss bars or renew.
3. Install new magnetic reverser 8464117.
4. Install new magnetic power contactors 8461331.
5. Rework fuse holders and battery switch.'
6. Rework field shunting resistors or renew.
7. Install new automatic ground relay reset - 8443302.
8. Install new fast-on terminal boards.
9. Install new voltage regulator module card - 8440256.
10. Install new style relays, switches and resistors.
11. Install new wiring with fast-on lugs.
12. Install Barco speed controlled transition - 50-06755-01.
(1) 13. Delete
14. Install new thru-cable wheel slip system WS12 - WS14 - WS34 - relay 8172591.
15. Install new ground cut-out switch 8373198.
16. Install new battery field circuit breaker 8433382.
17. Install new battery field SCR 9316438.
18. Install new excitation control module card 9317758.
19. Install new battery charging assembly 9317803.
20. Install new auxiliary generator field 15 A SP 8458698 - circuit breaker.
21. Install new control 40 A DP 8458738 circuit breaker.
22. Install 15 AMP circuit breaker, 8458739, in circuits for radio, water cooler and "elec. devices".
23. Install filter, 8458504, for pressurization of cabinet.

(1) Revision 7/1/80 - delete Search - file 1293(872-137)

24. Install new local control 30A 3 Pole 8458742 circuit breaker.

25. Install new fuel pump 15A 3 Pole 8458741 circuit breaker.

(3) 26. Install new motor field shunting contactor 9310498 with rectifier kit 8476006 and interlock 8330086.

27. Install new test panel assembly 8464683.

28. Install CA12 and CA13 (1 mfd, 200 V capacitor) to back of EC module panel per Dwg. 8396.

(3)(1) 29. Install CD2 (8421017) diode and 100 mfd, 100 V capacitor) to terminal board 30 area per Dwg. 8396.

(4) 30. Apply urethane foam insulation, 9505997, to back of doors on cab side. Apply so the black urethane film is exposed.

(2) Search

Delete

(1) Revision 6/11/80 (correct P/N)
(2) Revision 7/1/80 - Delete Search - file 1293 (872-137)
(3) Revision 8/14/80 - Items 26 & 29 (to correct part number)
(4) Revision 11/20/80 (to specify

A.C. Voltage & Air Compressor Control Cabinet

1. Manufacture new A.C. cabinet - Drawing 8137.
2. Install new A.C. fan contactors - 8307357 - with interlock kit - 8446092.
3. Install new CRR-CRL relay - 8363168.
4. Install two (2) stage air compressor control switch - 8328444 - with (3) pole plug - 8324136.
5. Install vented shutter control valve - 8452907.
6. Install duplex magnet valve, Salem 814-816TL, for operation of front and rear shutters.
7. Install auxiliary magnet valve, Salem 816QL, for air compressor control.

(1) 8. Install rectifiers - 8376607.

9. Install air compressor gauge 0-200 lbs, 8015552, or equivalent.
10. Install 817 dirt collector.
11. Install new fast-on terminal strips - 8292938.

(1) 12. Delete

(1) 13. Delete

14. Install cut out cock for air compressor control, 572468.

(1) Revision 6/11/80 (correct P/N)

Wire, Cable, Conduit - Terminal Boards

1. Fast-on terminals - except No. 8 wire size or larger - stud type.
2. Replacement wires shall be of the same size removed except where a larger size is specified or required.
3. No splices are to be pulled into conduit. All connections are to be made at Terminal Boards where possible, otherwise only in junction boxes or fittings.
4. Whenever wires or harnesses are laid on or bent around edges of metal or other material, anti-chafing protection shall be provided between the wires and the edges.
5. All wires and cables to be identified at each termination. Wire markers must be suitable for diesel use; oil and solvent resistant.
6. Install AC wiring and DC wiring in separate conduits.
7. AAR standard 27 wire trainline, basic AAR pin assignment. All trainline wires to be #14 AWG except 4-13-25 which are to be #12 AWG. Shroud type MU pins are to be used. Connection for the MU's shall be made at the main terminal board and the terminal board located at the load regulator.
8. All high voltage power cables will be ITT Hypalon insulation (if replaced).
9. Delete terminal board in junction box at each end of frame for M.U. receptacle. The junction box will remain in the frame.

(1) Main Generator - Model D22B-D14

1. Cob blast armature, frame and AC stator.
2. High frequency test armature - if it does not pass test, it will be replaced with rewound armature.

(1) 3. Install armature rewound to D22B.

(1) 4. Delete

(1) 5. Delete

(1) 6. Delete

(1) 7. Delete

(1) 8. Delete

(1) 9. Delete

10. Main head bushing is checked and new case hardened bushing installed as required.
11. Frame coils and leads checked and renewed as required.
12. Frame is dipped in varnish.
13. Frame is baked eight (8) hours at 300° F.

(1) 14. Install rewind kit in frame.

15. A.C. frame is dipped in varnish.
16. A.C. frame is baked eight (8) hours at 300° F.
17. Remanufacture slip rings and renew brushes, 8271183.
18. Brush holders are remanufactured.
19. Install new brushes DE-8 - 8307806.
20. Install air box 8340335 on end bell.
21. Hi-pot main generator.

(1) 22. Apply the following information on the main generator:

a. Rebuilt date
b. An "A" to indicate that the armature and frame have been rewound

(1) Auxiliary Generator - 18 KW/Traction Motor Assembly

1. Assemble auxiliary generator and blower assembly using 36 blade fan, 8489204. Refer to P.L. H3611, page 15, column "A" beginning with all components from Ref. No. 6.
2. Dynamically balance the armature.
3. Auxiliary generator is electrically tested.
4. Install conduit for auxiliary generator from rear top of HVC - connection at HVC must be sealed air tight.

(1) Revision 4/15/80 (To change to 18 KW Aux. Gen.)

Traction Motors D-47- D77

1. Cob blast armature and frame.
2. High frequency test armature - if it does not pass test, it will be replaced with rewound armature.
3. Armature placed in varnish vacuum impregnator four (4) hours.
4. Armature baked eight (8) to ten (10) hours at 300° F.
5. Armature commutator turned in lathe.
6. Armature commutator slots are undercut.
7. Armature commutator slots are cleaned and vee'd.
8. Armature is dynamically balanced.
9. Armature is assembled using new or factory remanufactured bearing assemblies, new gaskets and new inserts.
10. Frame is gaged at all critical points.
11. Frame is welded and machined at points as required.
12. (1) Frame coils and leads are checked and renewed as required - retorque coils and shim only if loose. If one coil or interpole is found to have been hot, all should be changed.
13. Frame is dipped in varnish.
14. Frame is baked eight (8) to ten (10) hours at 300° F.
15. Brush holders are remanufactured.
16. Install new brushes - 9322058.
17. Install new pinion as required.
18. Traction motor tested and run for one (1) hour.

(1) Revision 11/20/80 (per M.D. & P. S. agreement of 10-21-80)

Magnetic Reverser

1. Install new - four (4) each 8464117.

Magnetic Power Contactor

1. Install new - six (6) each 8461331.

Isolation Switch Panel

1. Manufacture new panel, Dwg. 8292.
2. Install all new parts.
3. Install new wiring.
4. Install battery charging indicator, 8295501.
5. Emergency fuel stop button, 8384650.
6. Emergency fuel stop nameplate, 8370564.
7. Isolation switch, 8433191.
8. Isolation switch nameplate, 8257725.
9. Remote headlight switch, 8439118.

(1) 10. Headlight switch nameplate, 8182169.

11. Warning lights:

    a. Lamp - 8421182

    b. Lamp Holder - 8438423

    Indications

    a. ETS - Hot Engine - Red Lens - 8438424

    b. Test - Load Test - Clear Lens - 8438425

    c. LOS - Low Oil Pressure - Amber Lens - 8438426

    d. NVR - No Power - Blue Lens - 8438427

    e. TMCO - Traction Motor Cutout - White Lens - 8438428

12. Platform and engine room light switches, 8404148.
13. Ground relay reset button, 8230431.
14. Traction Motor cut-out switch, 8363900.

(1) Revision 6/11/80 (correct P/N)

Fuel Pump and Motor

1. Dismantle and clean.
2. Qualify field coils.
3. Qualify armature, turn, undercut, saw and "V".
4. Insulate with "Dolph" insulation spray.
5. Renew bearings, qualify end bells.

(1) 6. Renew brushes, 8078488.

7. Assemble and test run.
8. Remanufacture fuel pump.

Batteries

1. See Page 4 Item 11 for remanufacture of battery box.
2. Paint interior of battery boxes with:

Coopers Creek Chemical	ICG stock item
C-4 Gloss Black M-202	Class 47/440
Asphalt Protective Coating	

3. Install batteries - 425 AMP hour - 25 plate cells.

(1) Revision 5/13/80 - (to correct typing error)

Traction Motor Blowers (See Auxiliary Generator)

1. Install 36 blade fan, 8489204.
2. A minimum static pressure of 10" H_2O is required when measured at traction motor cover.

Load Regulator

1. Install rheostat type 8423587.

Cooling Fans

1. Dismantle and clean.
2. Renew bearings.
3. Megger test windings.
4. Inspect rotor.
5. Assemble and test.

   Note: Reinstall "in kind" either:

   4 each - 36" fans, 5526269

   or

   2 each - 48" fans, 8311479 (6 blade) or 8310416 (8 blade)

Console (AAR) Controller

1. Manufacture new control stand.
2. Install mechanism - EMD No. 9091052.
3. Install all new wiring.
4. Install Salem 794-301 4-1/2" gauges with flow indicator - black background with white numbers.
5. Install Salem 3960-003 air gauge cover assembly.
6. Install Push-Test warning light assembly No. 8484375 - warning lights:
   a. PCS - Pneumatic Control Switch - 8482357
   b. WS - Wheel Slip - 8482355
   c. Sand - Sanding - 8482354
   d. Emergency red headlight - 8482358
   e. GR - Ground Relay - 8483704
7. Sand switch is latching type - 8315490.
8. Lead truck sand switch - on/off - 8331384.
9. Inch switch for Oscitrol headlight, PPC-HLA-200-27.
10. Attendant call button - 8126019.
11. Headlight selector switch - 8237656.
12. Install radio in control stand. (See page 37)
13. Install "AAR" load meter 8481324 - dial will be "Blank-0-1500".
14. Install brake valve handle holder on R lower end of controller.
15. Install all new switches:

    Headlight - 8455355 with a date code of 7916 or above
16. Install CD1 (8421017 diode and 100 mfd, 100 V capacitor) to terminal board 50 area per Dwg. 8396.

Dynamic Brake

1. Delete

ATS Cab Signal

None

Radio

(1) 1. Install Push-To-Talk, SAB-Harmon as follows:

VHF Radio Model 4S55C - 1339 - 1342 12/72 Volt D.C. Operation

with dispatcher tone option and internal mike/amp/filter

Dispatcher tone 1 - 2600 HZ

Dispatcher tone 2 - 2200 HZ

Channel 1 - 161.190 MHZ

Channel 2 - 160.920 MHZ

Channel 3 - 161.460 MHZ

Channel 4 - 161.280 MHZ

Channel 5 - 160.950 MHZ

Install in top of controller.

2. Antenna - Sinclair Radio Labs - Model Excaliber - Part No. 2Z01.

Note: The 74V power supply plug connector is 90°:

97-3108-B-18-45 - Socket
MS-3057-10A - Clamp

Furnished by:

Genesis Electronics
111 East 54th Street
Indianapolis, Indiana 46220

(1) Revision 11/20/80 (brand name change only)

Speed Indicator - Recorder

1. Install BARCO SIS-800 speed indicator.
2. Right angle drive - refer to truck section.

Water Cooler

1. Install AJAX 685.

Sanitary (toilet) Facilities

1. Install PPC toilet - 12200.
2. Install new paper holder.
3. Install drain pipe - (See Item 22, Page 2)

Fire Extinguisher

1. Apply two (2) 20 lb. ANSUL - one in cab and one in engine room.

Final Test

1. Check for leaks - water, fuel, lube oil, and air systems.
2. Air cure main generator.
3. Sequence test all circuits.
4. Check all lights.
5. Load test one (1) hour - check shutter opening and setting of temperature switches.
6. Record all pressure, vacuum, and temperature readings.
7. Set transition.
8. Make final movement and running checks.

Locomotive Weight

1. Weigh each unit when completed - furnish total weight ticket and weight on front and rear - adjusted for supplies.

Paint

1. Performance Polymer "Polyac" paint.
2. Delete ACI labels.
3. Modulite number panels, white with black numerals.

Old Road Number	New Road Number
ICG GP-7 or GP-9	8700 Series

4. Color code water, fuel, lube oil piping flange - valves.
5. Paint locomotive numbers on side of cab white.
(2) 6. Apply decal "FULLY EQUIPPED FRA PART 223 GLAZING" to cab wall.
(1) 7. Stencil on each side of prime mover, "Equipped with E power assemblies and 058 injectors" (applicable to installation of 645 power assemblies).
(1) 8. Paint exhaust stacks with SP-106 paint from V.H.T. Company.
(3) 9. Do not stencil min./max. on load regulators.

Records

1. Complete Locomotive Data Sheets.
2. Engine Rebuild Sheets.
3. MACS Reports.

Test Run - 72 Hour Inspection

1. The finished locomotive will be one of the units in a consist in regular freight service on ICG's main tracks, Paducah to Memphis, Tennessee, and return, with a quality inspector on board to monitor operation and settings on unit.
2. Following test run, unit will be given 72 Hour Inspection and:
   a. Take oil sample for laboratory analysis.
   b. Correct all exceptions noted by Quality Control.

(1) Revision 7/1/80
Item 7 - (per ICG MI 205 Rev.A) 40
Item 8 - (per JDJ's letter 3/26/80)

(2) Revision 8/14/80 (to specify use of decal)

(3) Revision 11/30/80 (per RWP verbally 10-30-80)

SPECIFICATIONS

P.O. _____ SHOP ORDER _____

DATE Original 1978
Revised for 1981 Series

ICG 1400 Series
1450 to date

FOR ILLINOIS CENTRAL GULF RAILROAD

REMANUFACTURED SWITCH UNITS TO SW14

UNITS 1450 AND LATER

- INDEX -

- INDEX -

GENERAL DATA

MODEL	ICG SW14
HORSEPOWER	1200 ± 50
ENGINE	12-567 "BC" or "C"
MAIN GENERATOR	D-15
AUXILIARY GENERATOR	10 KW
TRACTION MOTOR	D-27 (minimum)
AIR BRAKE	26 NL
SAND CAPACITY	24 cu. ft.
FUEL CAPACITY	600 gal. (minimum)
COOLING WATER CAPACITY	230 gal.
LUBE OIL CAPACITY	170 gal.
GEAR RATIO	62/15
WEIGHT (APPROX.)	242,000 - 248,000 Lbs.

Note: All units equipped for M.U. operation.

Main Frame

1. Strip frame and sand blast.
2. Inspect the following critical areas for damage and wear and restore to standard dimensions:
    a. Draft gear pockets
    b. Center castings
    c. Air ducts
    d. Fuel tank supports
    e. Mounting pads for engine, main generator and air compressor
3. Repair all damaged and worn areas.
4. Check frame alignment and straighten as required.
5. Modify frame (as required) for SW9 type traction motor blower system and engine sump area per dwg. 8257.
6. Install all new channel type handrail stanchions with handrails included on both sides per dwg. 8642.
7. Inspect and renew all piping that is critically worn and renew all under frame piping less than 3/4" I.P.S. with rigid copper tubing.
8. Install uncoupling levers in accordance with FRA Side Step Rule 231 - renew as required per dwg. 8480.
9. Rework all bent endplates and install pilot plates in accordance with FRA Rule 229.123 (ref. dwg. C100203).
10. Rework all corner steps in accordance with FRA Rule 231 per dwg. 8480.
11. Provide panel for electric emergency fuel shut off button per dwg. 8482.
12. Renew all traction motor underframe leads using Neoprene cable cleats B-14125 from URE Service as replacement clamps.

Main Frame (continued)

13. Install MU arrangement at each end (as required):
    a. Hinged ramps per dwg. 8170
    b. Insulated cable cradle, 8472802, under each ramp
    c. Hand rail arrangement with bendaway stanchions and safety chains per dwgs. 8678 and 8674
    d. Trainline electrical receptacles, 8242444, per dwg. 8589
    e. Platform lights per dwg. 8480
14. Install engine, main generator sump and engine room sump drains - must not drain on rails.
15. Install step light at each down step per dwg. 8477.
16. Install rerailing frog brackets per dwg. D51923.
17. Pipe engine air box drains below frame to drain outside the rails per dwg. 8257-A.

Fuel Tank - 600 Gallon Capacity

1. Remove and steam tank.
2. Cut open top of tank.
3. Inspect interior for loose or worn plates, for cracks, and any other possible damage - repair as required.
4. Thoroughly clean interior of tank.
5. Reweld top back in position, test tank for leaks, ensure that all water is removed.
6. Install long fuel sight glasses, 8370681, on each side per dwg. 8643. Remove all other fuel sight glasses from the tank.
7. Install fuel tank drain valve and cover per dwg. 7323.
8. Install vent pipe in accordance with the following:
    a. Install one each 2" vent pipe on right side per dwg. 8643 to vent outside rails.
    b. Delete flame arrester, 8167296.
    c. Install Farr vent filter canister, B-36253, with element, B36272.
    d. Remove all other vent piping.
9. Install reworked or new Houston automatic shut-off fuel fill system with:
    a. Coupler H-1023
    b. Cap H-1024
    c. Horizontal pilot valve H-1029-C , dwg._____
    d. Aeroquip hose

Draft Gear - Coupler - 485-5A gear with "E" coupler

1. Dismantle, clean, and inspect yoke and coupler for wear and damage - weld and machine back to standard as required.
2. Renew all pins and bushings.
3. Renew all rubber gear pads.
4. Rework coupler carrier.

Cab

1. Manufacture complete new cab with new design front end sheet per dwg. 8251.
2. Install all new conduit and wiring.
3. Install insulation in ceiling and walls. Cover ceiling, area on each side of side windows and area over front and rear windows with perforated metal, and cover area below windows with 3/16" sheet iron on the sides and 1/8" sheet iron front and rear.
4. Install new sand boxes with round fill covers, 8347857, per dwg. 8251.
5. Install 1" Benelex flooring.
6. Install new cab doors with safety hooks:
    a. Front door, 9089628, with lock body, 8284665, and and handle, 8154876
    b. Rear door, 8370440, with lock assembly, 8370808

    Provide door handle clearance of 2 1/2" between handrail and opened rear door.
7. Install steps and skirts with rubber bumper, 8024232, to provide door stop:
    a. At front door, per dwg. 8251 - Sheet 1
    b. At rear door, per dwg. 8569
8. Install FRA Part 223 certified glazing - Type I for front and rear facings; Type II polycarbonate for side facings (ref. dwg. B100632 Rev. C and JTN dwg. 35072). Use J. T. Nelson kit 58032 which includes glazing, sliding sashes, seals, and J frames.
9. Install Schell bay window, S-53326-3L - right side only. Cab awnings are deleted; however, install brackets per dwg. for future use.

Cab (continued)

10. Install cab ceiling lights, 9096838.
11. Install dual sealed beam headlights and modulite panels - use new Translite housing C14685-A, as required.
12. Install class lights, 8355678.
13. Install ratchet lever hand brake, 8191508.
14. Install electric cab heaters from Prime Mfg. Co. per dwg._____:
    a. Engineer's side, PM-5006-3
    b. Fireman's side, PM-5002 (strip heater)
15. Install rail mounted GP type cab seats, 9087100 - one on each side.
16. Install emergency brake valve per dwg. C51166.
17. Install cab accessories per dwg. 8261:
    a. Federal card holder, PPC-12182
    b. Card holder, PPC-12208
    c. Flag, fusee, torpedo holder, PPC-5002614
    d. Dry chemical holder, PPC-11433
    e. 24 hour trip inspection holder, PPC-11437
    f. Decal "Procedures for Starting and Shutting Down Diesel Engines"
    g. Water cup holder
18. Install new (AAR) console controller manufactured per dwg. 8281 with space provided for integral mounting of Trackstar radio heads. Install per dwg. 8261.
19. Install 20 lb. Ansul fire extinguisher per dwg. 8261.
20. Install Ajax 685 water cooler.
21. Install fresh air cab ventilator, Salem 672-100, and trim, 2756, per dwg. 8251.

Carbody (Long Hood)

1. Remove hood, strip all components, and sand blast.
2. Inspect and renew all damaged and rusted out sections.
3. Modify radiator compartment and fan housing (as required) per dwgs. 8485 and 8278 respectively.
4. Inspect and clean out sand boxes and modify inlet chute for round cover, 8347857, or renew boxes (as required) per dwg._____.
5. Qualify or renew (as required) all door hinges and latches - latches to be 8158536.
6. Qualify roof hatches over prime mover.
7. Install (as required) bolt on roof hatch for auxiliary generator change out per dwg. D52774.
8. Recondition all door louvers and carbody filter holders (ref. dwg. C51154).
9. Apply putty, sand, clean, and apply primer.
10. Renew all wiring and renew all conduit as required.
11. Install 6" radiators - 3 sections per side.
12. Install radiator air discharge screens, 8370775, (or shop made, dwg._____).
13. Install Ogontz model EMD S4 cooling system by-pass valve.
14. Rework or renew (as required) shutter assembly, 8371821, and screen, 8307776. (Screen may be shop made per dwg._____.)
15. Install dual sealed beam headlight and modulite panels - use new Translite housing assembly, C14685-A, as required.
16. Install class lights, 8355678.
17. Install new Salem magnet valves per dwg. _____.
18. Install hose, 8169073, or equivalent, to bell ringer.
19. Donalson engine air filter system, model EYB12-0145, bolted to blower adapter.

Radiators - 6" cores

1. Dismantle all radiator sections.
2. Rod out and clean all cores in vat.
3. Test core submerged in water tank with air pressure.
4. Leaking cores are re-soldered.
5. Fins are straightened.
6. Check for loose fins.
7. Side plates are repaired and soldered as required.
8. Delete radiator header screens.
9. Cores are re-assembled with roto blasted heads and straps.
10. Renew all gaskets.
11. Water hydro assembled radiator section at 50 - 60 PSI.
12. Apply re-manufactured date tag.

Traction Motor Blower System - SW9 Type

1. Convert to SW9 type arrangement as required.
2. Install with all new bearings.
3. Install with all new belts.
4. Inspect belt sheaves and renew as required.
5. Install inspection door per dwg. D52767 in top of guards covering fan belts for front and rear traction motor blowers.

Cooling Fan - SW9 Type

1. Convert to 5-belt SW9 type arrangement as required.
2. Install with all new bearings.
3. Install with all new belts.
4. Inspect belt sheaves and renew as required.

Trucks - Gear Ratio 62/15 - Roller Bearing Type

(Ref. Axle, Elliptical Springs, and Journal Box sections.)

1. Dismantle; sand blast frame and bolster.
2. Sand blast or roto blast: swing hanger, brake hangers and brake rods.
3. Visually inspect frame for cracks and worn areas; repair as required.
4. Tram frame and straighten as required.
5. Weld and grind pedestal jaws as required.
6. Weld and redrill traction motor support lug.
7. Renew all pins and bushings.
8. Renew all worn wear plates.
9. Install tested and matched coil springs.
10. Weld on metal pedestal liners, PPC 2814.
11. Install reworked and tested or new elliptical springs.
12. Install reworked brake cylinders.
13. Rework brake hangers and straps.
14. Install reworked journal boxes.
15. Rework or install new quik-just slack adjusters - Touchstone 22152-22A
16. Rework gear cases renewing all seals; fasten with huck fasteners.
17. Reinforce spring pockets and bolster air duct per dwg. 7760.
18. Chamfer all brake lever openings.

Wheel/Axle Assembly (roller bearing type) 62/15 Gear Ratio

1. Reflectoscope and qualify all axles.
2. Inspect (magnaglo) and qualify gear, replace as required with new or reprofiled 62-tooth gear.
3. Install new axle EMD 8288849 or modify axle for installation of roller bearings per dwg. D53134.
4. Polish and roll traction motor support bearing area; turn if necessary.
5. Mount new 40" wheels - AAR D40 class B; mount using boiled linseed oil - Spec. ANSI/ASTM D260.

Journal Boxes (roller bearing type) - Timken 6 1/2" x 12"

1. Install housing, Timken K-125601.
2. Roller bearing assembly, Timken HM-133444 - 90075 (includes axle end cap and locking plate).
3. Torque cap screws 360-390 ft. lbs. and ensure that locking plate tabs are bent against cap screw heads.

Note: See Timken sheets A-34676 and A-39212 for list of component parts.

Elliptical Springs

1. Clean in hot tank.
2. Inspect for defects.
3. Check free height.

   If springs fail inspection or free height check - following must be done:

   a. Cut band
   b. Reset leaves or manufacture new
   c. Quench and temper leaves
   d. Reband with new band
   e. Test spring

Equipment Rack

1. Manufacture new frame per dwg. 8178.
2. Install qualified 4-element lube oil filter tank.
3. Install new water tank, manufactured by shop per dwg. 8178.
4. Install SW-1500 lube oil cooler, 8365865 (ref. lube oil cooler section).
5. Install large sock type primary fuel filter, 9502100.
6. Install fuel strainer, 8341983 (includes element, 9324489).
7. Install fuel oil heater 9417269 with thermostatic mixing valve, 9091415 per dwg. _____ (Note: No manual valves in line)
8. Install temperature manifold, 8367623, with the following Sundstrand switches with 3 pole plug, 8324136:

Switch	Sundstrand P/N	Close	Open
SH	975-0485-006	175° F	165° F
ETS	975-0485-011	200° F	190° F

9. Install pressurized cooling system with PPC-6213, 7 P.S.I. pressure cap.
10. Install prime/start switch - 8441983.
11. Install air compressor control panel with Salem 775 test fitting on air gauge.
12. Install lube oil pressure gauge.
13. Install reworked fuel pump and motor.
14. Install all piping per dwg. 8178.
15. Install all new conduit and wiring; governor wiring to be high temperature wire, AAR Spec. 590.

Lube Oil Cooler - 8365865

1. Requires -

   2 each 8221295 - Outlet Coupling

   2 each 8213940 - Gaskets

2. Install and pipe per lube oil and water piping dwg. 8178.

Engine - Model 567 "BC" or "C"

1. Strip and clean case and pan in hot tank.
2. Convert "B" to "BC" as required.
3. Paint crankcase and oil pan with sealer.
4. Inspect and repair or correct as required:
    a. "A" frame alignment
    b. Crankcase and oil pan
    c. Thrust collar
    d. Lower liner
    e. "P" pipe alignment
5. Spot face main bearing caps for hardened flat washer and nut.
6. Tap all bolt holes and repair by installing new thread inserts, RKK, furnished by Tridair Industries.
7. Rework all component parts: dismantle, clean, inspect, renew all worn parts, seals, and gaskets:
    a. Water pumps
    b. Lube oil pumps
    c. Blowers - test run for 1 hour
    d. Crankcase protector
    e. Oil separator
    f. Governor - electro hydraulic with rotary terminal shaft - overspeed trip setting set at 920-935 RPM (for 8th notch speed setting of 800 RPM)
    g. Governor drive
    h. Injectors - No. 5229295 - BC
5229290 - C
    i. Harmonic balancer - 6 spring packs, new spring plate and pins required.

Engine - Model 567 "BC" or "C" (continued)

j. Accessory drive gear

k. Lube oil relief valve

l. Auxiliary generator drive assembly

m. Overspeed trip housing - use seals, 9095686

n. Front and rear housing assemblies

o. Lube oil crossover manifold assembly

p. Top deck frame assemblies and covers

q. Lube oil strainer housing

r. Camshaft assemblies:

(1) Polish all journals and cams

(2) Check run out

(3) Renew all bearings

s. Idler gear stubshaft assembly - machine for increased oil passage per dwg. 7784.

t. Layshaft:

(1) Inspect and straighten - remove burrs

(2) Spray weld, grind, and polish all worn areas

u. Handhold cover assemblies

v. Power assemblies:

(1) Cylinder heads - inconnel valves

(2) Pistons - Koppers or EMD rings

(3) Liners - reworked cast iron or chrome plates

(4) Connecting rods

(5) Carriers

Engine - Model 567 "BC" or "C" (continued)

9. Install new:

    a. Cylinder relief valves, PPC -11695

    b. Idler and blower drive gear bushings and thrust washers

    c. Spin-on fuel filter, 8423132 (or approved equal)

    d. Data badge plates

    e. Injector timing badge plate, 8293392

    f. Lower liner inserts

10. Install new style flywheel (old style modified per dwg. _____) using new hardened washers and nuts.

11. Water hydro test engine.

12. Set injector racks and injector timing.

13. Set exhaust valves.

14. Take cylinder head clearance lead readings.

15. Fill out all engine rebuild data sheets.

16. Load test engine in test cell per instructions from R. W. Leedy May 20, 1980.

(6) Wrist pin

(7) Rocker arms

(8) Valve bridges

(9) Cylinder head, overspeed trip mechanism, injector control linkage

Note: Use Parker head-to-liner seal assembly 698-058; install dry and torque to 240 ft. lbs.

w. Crankshaft assembly - qualified steel or chrome plated:

(1) Remove all plugs and clean oil passages.

(2) Magna-glow inspection for cracks.

(3) Measure all journals.

(4) Inspect and polish all journals.

(5) Apply new pipe plugs and clean oil passages.

(6) Install new main bearings - Clevite.

(7) Install new connecting rod bearings - Clevite.

(8) All journals must be standard dimensions.

(9) Bolt on stub end - if stub end is damaged.

(10) Inspect oil slinger.

8. Reassemble all parts using new gaskets and seals.

Exhaust System

1. Install manifolds with spark arrestors, Farr Kit L-55025.

Air Brake Schedule - 26 NL

1. Install system in accordance with air brake schematic dwg. 8122.
2. Install new 6-NR distributing valve portion with safety valve, 560775.
3. Install ball type vented 1 1/4" angle cock, 8416261, on brake pipe trainline.
4. Install brake cylinder quick release valve 41835 with 1/4" orifice in exhaust.
5. Install Salem air gauge test fittings at the following points:
    a. Main reservoir gauge - use 775
    b. Air compressor control switch - use 775-3
    c. Emergency sand switch - ESS - use 775-3
    d. Pneumatic control switch PCS - use 775-3
6. Install Swagelok fittings on all copper tubing.
7. All trainline air piping cut-out cocks are to be ball type-locking handle.
8. All trainline air piping less than 3/4" IPS must be copper tubing.
9. Install two KM-2 vent valves, 705435.
10. Install brake valve exhaust pipes through floor per dwg. 8144.
11. Install MU air hoses at end plates per dwg. 8135.

Air Compressor - WBO Low Base

1. Dismantle and clean all parts.
2. Inspect and dimensionally check crankshaft. Replace with remanufactured crankshaft - as required.
3. Renew all bearings, seals and gaskets.
4. Renew piston rings.
5. Qualify pistons and wrist pin, install new as required.
6. Install Triangle drilled HP connecting rod, 6250.
7. Install remanufactured Triangle oil pump, 65721 (EMD 8130811).
8. Remanufacture cylinder head assemblies.
9. Install honed to standard size cast iron cylinder liners - install sleeved liners as required.
10. Remanufacture inter cooler.
11. Renew new shims and check crankshaft lateral.
12. Install PPC dip stick, PPC-10516.
13. Fiberglass filter EMD 8402067 - or equivalent.
14. Install Aeroquip quick-disconnect fitting, 5600-4-4, for checking oil pressure. (Delete oil pressure gauge.)
15. Install EMD Compressor Sediment Removal Kit - 8498379.
16. Replace crankcase breather valve assembly with Reed type, 9519501.
17. Load test 4 hours.
18. Install fan drive sheave, 8164679, (5-belt SW9 type) and blower drive sheave, 8163168.
19. Install on locomotive and install water piping per dwg. L-1258 using 2 each 3-way valves, 705690.
20. Install rubber coupling air compressor drive shaft, 6926690.

Main Reservoir

1. Remove, clean and inspect.
2. Reservoirs are to be drilled according to FRA Rule 206(c).
3. Install system in accordance with main reservoir piping schematic 8130.
4. Install reworked safety valve or install new J-1 type, set 146-148 PSI.
5. Salem 818-1-20 auxiliary air filter.
6. Salem 824-1-50 filter to brake system vented in line with or toward center of locomotive.
7. Weld adapter block on No. 1 and No. 2 main reservoirs for Salem 580H automatic drain valve per dwg._____.
8. Check valve with 1/4" orifice in main reservoir equalizing trainline.

Sanding - Electric

1. Install in accordance with sanding piping schematic, 8129.
2. Install Salem 277-2 sand traps - outboard sanding only.
3. Delete inboard sanders.
4. Remove all old trainline sanding air piping.
5. Sand capacity - 24 cubic feet.

Air Horn

1. Install Nathan three (3) chime P-14R2 per dwg. 8261.
2. Install modulating horn operating valve, Viloco 11062 (8318019). with vertical handle 9099639 in control stand.
3. Renew horn mounting (rubber) pad, 8185843.

Crossing Bell

1. Install top of long hood per dwg. 6947.
2. Install Salem 506 double-acting bell ringer.
3. Install hose 8169073 to ringer.
4. Install operating valve, Salem 616-1A, in control stand.

Hand Brake

1. Install ratchet type, 8191508, 18" lever with 11'7" chain per dwg. _____

High Voltage Electrical Cabinet

1. Modify or manufacture new frame, dwg. 8644.
2. Rework copper buss bars or renew.
3. Install new electric reverser.
4. Install new electric power contactors.
5. Rework fuse holders and battery switch.
6. Rework shunt field resistors or renew.
7. Install new automatic ground relay, 8443302.
8. Install new fast-on terminal boards.
9. Install Power Parts voltage regulator, PPC-12081.
10. Install new relays, switches and resistors.
11. Install new wiring with fast-on lugs. Wire size to be 14 AWG minimum wire size 12 and 14 AWG should be Exane insulation.
12. Install voltage transition - no motor field shunting.
13. Thru-cable wheel slip system.
14. Install battery charging indicator, 8142028, R-side of cabinet in view of engineer.
15. Engine room light switch mounted on L-side of cabinet.
16. Install carbody latch type cover on back of high voltage cabinet (engine room side) dwg._____.
17. Install ground relay reset button, 8265676.
18. Install truck cut out switch, 8276326.
19. Apply truck cut out name plate, 8350437.
20. Install double pole ground switch, Graybar TC785.

High Voltage Cabinet Electrical List:

5 each - 8361775 - (8357416 may be used, but only as substitute) Relay - FOR - RER - ER - PCR - GFR

2 each - 8357416 - Relay - FPC - TR

1 each - 8244055 - Contactor - SF

1 each - 8254056 - Contactor - BF

3 each - 8461331 - Contactors - P1 - P2 - S12

2 each - 8464113 - Reverser - RVF - RVR

1 each - 12081 - Regulator - Voltage (Power Parts)

2 each - 8277035 - Relay - FTR - BTR

2 each - 8276598 - Relay - Time Delay - TDB - TDS

1 each - 8277466 - Resistor - RE10A-B-C

1 each - 8398604 - Resistor - RE8

1 each - 8314386 - Reisstor - RE6

1 each - 8371296 - Resistor - RE4

1 each - 8260224 - Resistor - RE1

6 each - 8375607 - Rectifier - CR2 - 4 - 6 - 32 - 33 - 34 - 35

1 each - 8158951 - Rectifier - CR1

1 each - 8458698 - Circuit Breaker 15A (Aux. Gen. Fld.)

1 each - 8458699 - Circuit Breaker 30A Headlight

2 each - 8458724 - Circuit Breaker 30A Cab Heater - Lights

1 each - 8458738 - Circuit Breaker 40A Control

2 each - 8458739 - Circuit Breaker 15A Fuel Pump - Radio

1 each - 8485669 - Circuit Breaker 60A Cab Heater

Wire, Cable, Conduit - Terminal Boards

1. All 12, 14, and 16 AWG wire shall be Exane insulated. All other size wire shall meet AAR Spec. 589.
2. Fast-on terminals - except No. 8 wire size or larger - stud type.
3. Replacement wires shall be of the same size removed except where a larger size is specified or required.
4. No splices are to be pulled into conduit. All connections are to be made at terminal boards where possible, otherwise only in junction boxes or fittings.
5. Whenever wires or harnesses are laid on or bent around edges of metal or other material, anti-chafing protection shall be provided between the wires and the edges.
6. All wires and cables to be identified at each termination. Wire markers must be suitable for diesel use; oil and solvent resistant.
7. Trainline receptacles shall be AAR standard. Trainline wires to be 14 AWG except 4, 13, and 25 to be 12 AWG. Use shroud type MU pins on both trainline receptacles. The MU junction box at each end shall be eliminated. Connections for the MU receptacles shall be made at TB3 and TB6.
8. Renew high voltage power cables with ITT Hypalon insulation.

Main Generator - D-15

1. Cob blast armature and stator.
2. High frequency test armature - if it does not pass test, it will be replaced with rewound armature.
3. Armature placed in varnish vacuum impregnator 4 hours.
4. Armature baked 10 hours at 300° F.
5. Armature commutator is turned in lathe.
6. Armature commutator slots are undercut on automatic undercutter.
7. Armature is dynamically balanced. (As required)
8. Armature commutator slots are cleaned and vee'd.
9. Armature is assembled using new bearing and gaskets.
10. Main head bushing is checked and new case hardened bushing installed as required.
11. Frame coils and leads checked and renewed as required.
12. Frame is dipped in varnish.
13. Frame is baked 8 hours at 300° F.
14. Brush holders are remanufactured.
15. Install new brushes DE-8 8307806.
16. Hi-pot main generator.

Auxiliary Generator - 10 KW

1. Cob blast armature and frame.
2. Test armature - if armature does not pass test, it will be replaced with rewound armature.
3. Armature dipped in varnish.
4. Armature baked 8 hours at 300° F.
5. Armature commutator is turned and undercut.
6. Armature commutator slots are cleaned and vee'd.
7. Armature is assembled with new bearings and gaskets.
8. Install new E-44 brushes 4997086.
9. Frame coils and leads are checked and replaced if needed.
10. Frame is dipped in varnish.
11. Frame is baked 8 hours at 300° F.
12. Armature and frame are assembled with new brushes and reworked brush holders.
13. Auxiliary generator is electrically tested.

Traction Motors D27 - D77

1. Cob blast armature and frame.
2. High frequency test armature - if it does not pass test, it will be replaced with rewound armature.
3. Armature placed in varnish vacuum impregnator 4 hours.
4. Armature baked 8-10 hours at 300° F.
5. Armature commutator turned in lathe.
6. Armature commutator slots are undercut.
7. Armature commutator slots are cleaned and vee'd.
8. Armature is dynamically balanced.
9. Armature is assembled using new factory remanufactured bearing assemblies, new gaskets and new inserts.
10. Frame is gaged at all critical points.
11. Frame is welded and machined at points as required.
12. Frame coils and leads are checked and renewed as required.
13. Frame is dipped in varnish.
14. Frame is baked 8 to 10 hours at 300° F.
15. Brush holders are remanufactured.
16. Install new brushes DE7 9322058.
17. Install new pinion as required.
18. Traction motor tested and run for 1 hour.

Magnetic Reverser

1. Install new - 2 each 8464113.

Magnetic Power Contactors

1. Install new - 3 each 8461331.

Isolation Switch Panel

1. Delete - all components are installed on controller.

Fuel Pump and Motor

1. Dismantle and clean.
2. Qualify field coils.
3. Qualify armature, turn, undercut, saw and "V".
4. Insulate with "Dolph" insulation spray.
5. Renew bearings, qualify end bells.
6. Renew brushes 8078488.
7. Assemble and test run.
8. Remanufacture fuel pump.

Batteries and Box

1. Install new batteries, Exide MS-420 - 420 amp hour.
2. Renew all rusted out panels and angle iron.
3. Install support for battery tray.
4. Paint interior of battery boxes with:

   Coopers Creek Chemical
   C-4 Gloss Black M-202
   Asphalt Protective Coating

5. Install blocking for battery trays per dwg. 8659.

Console (AAR) Controller

1. Manufacture new control stand frame per dwg. 8182.
2. Install 26L air brake equipment (ref. Air Brake Section).
3. Install throttle mechanism, 9091052.
4. Install 4 1/2" gauges, Salem 794-266, (black background with white numbers) and cover assembly, Salem 3960-002.
5. Install push-test warning light assemble No. 8484375 - warning lights:
    a. PCS - pneumatic control switch - 8482357 - MU units
    b. WS - wheel slip - 8482355
    c. Sand - sanding - 8482354
    d. GR - ground relay - 8483704
    e. Hot engine - 8483724
    f. Low oil - 8483711 (Gov. down)
6. Install all new switches, including:
    a. Sand switch - latching type - 8315490
    b. Lead truck sand switch - 8331384
    c. Platform lights
    d. Step lights
    e. "Road Service/Switch" switch - 8140577
    f. "Series/Automatic" switch - 8113755 - for transition control
    g. MU headlight switch (top) in box on right end of controller per dwg. 8142
    h. Isolation switch (bottom) in box on right end of controller per dwg. 8142
    i. Headlight switch, 8455355, with a date code of 7916 or above

Console (AAR) Controller (continued)

7. Mount Trackstar radio in control stand.
8. Install emergency fuel shut off button, 8384650.
9. Install all new wiring.
10. Install brake valve handle holder on right lower end of controller per dwg. 8261.

Load Regulator - Vane Type

1. Degrease and cob blast clean.
2. Renew gaskets and seals.
3. Renew brushes.
4. Test resistors - renew as required.
5. Renew wiring as required.
6. Assemble and test.

Dynamic Brake

1. None

ATS - Cab Signal

1. None

Radio

1. Install SAB-Harman Trackstar 8 channel radio, dwg. _____.
2. Install 15A double pole circuit breaker in high voltage cabinet.
3. Install antenna - Sinclair Radio Labs model Excaliber - Part No. 2Z01.
4. Renew conduit.
5. Renew wiring.

Speed Indicator - Recorder

1. None

Water Cooler

1. Install AJAX 685

Sanitary (Toilet) Facilities

1. None

Fire Extinguisher

1. Apply two (2) 20 lb. ANSUL - one in cab and one in engine room.

Paint

1. Paint per dwg. C100254. Use Performance Polymer "Polyac" paint for all of outside above belt rail and for inside cab.
2. Delete ACI labels.
3. Modulite number panels, white with black numerals:

Old Road Number	New Road Number
ICG	1450 -
NW-2	
SW-7	
SW-9	

4. Color code water, fuel and lube oil piping flanges and valve handles.
5. Apply decal supplied by Power Parts Company, "FULLY EQUIPPED FRA PART 223 GLAZING."

Final Test

1. Check for leaks - water, fuel, lube oil and air systems.
2. Air cure main generator.
3. Sequence test all circuits.
4. Check all lights.
5. Load test one hour - check shutter opening and setting of temperature switches.
6. Record all pressure, vacuum and temperature readings.
7. Set transition.
8. Make final movement and running checks.

Records - forwarded to Chicago

1. Complete Locomotive Data Sheets.
2. Engine Rebuild Sheets.
3. MACS Reports.

Test Run - 72 Hour Inspection

1. The finished locomotive will be used in yard service at Paducah, with a Quality Inspector on board to monitor operation and settings on unit.
2. Following test run, unit will be given 72 Hour Inspection and:
    a. Take oil sample for laboratory analysis.
    b. Correct all exceptions noted by Quality Control.
    c. Change all lube and fuel oil filters.
    d. Retorque engine.
    e. Check truck lubrication.

Weight - fully loaded

1. Furnish scale ticket adjusted for supplies.

Shipping Dead-In-Train

1. Shipping units dead-in-train:
    a. Cover exhaust stacks.
    b. Drain cooling water in freezing weather.
    c. Test air brake with single car tester (for dead-in-train).

Acceptance

1. Acceptance by ICG Mechanical Officer from Chicago.

SPECIFICATIONS

P.O. _____ SHOP ORDER _____

DATE NOVEMBER 1980 ICG 2601-2674

FOR REMANUFACTURING GP30, 35 LOCOMOTIVES

TO GP 26 UNITS FOR ICG RAILROAD

(does not include locomotive 2500)

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Definitions of Terms Used to Govern the Specifications Set Forth in This Document

STANDARD(S) refer to limitations and instructions specified by the original equipment manufacturer or the customer. Whenever OEM and customer limitations differ, those set by the customer shall prevail.

DAMAGE means any condition including normal wear that results in an item not meeting specified standards and/or its original physical condition.

QUALIFY means to visually inspect and/or test in accordance with specifications, Maintenance Instructions, and instructional letters the specified material item and do one of the following:

a. If the item is undamaged, retain the item in its present state; remove the item and reinstall in its present state only as required to visually inspect and/or to perform another specified labor item.

b. If the item is damaged, perform the necessary repairs to restore it to its undamaged standard condition; if damage negates the feasibility of repairing the item, renew with a like item.

c. If standard practice requires specific acts or cleaning and/or reworking, take the necessary actions to satisfy such specifications and still retain the item in its present condition.

d. If an item other than that which is specified is presently installed, or if the item has been removed, install with a qualified or new specified item.

RENEW means to remove the present item and replace it with a new like item or an item specified for use by the specifications, Maintenance Instructions, and/or instructional letters.

REPLACE means:

a. To remove the presently installed item and install a specified qualified item in its place.
b. It is known that the specified item is not presently installed (it has been removed); therefore, install the specified item using a new reworked, or qualified item.

REWORK means to remove the specified item from the locomotive or component, separate it into its individual parts, and perform the acts of labor required in the specifications, Maintenance Instructions, procedure policies, and/or instructional letters to restore the item to its undamaged, standard condition, then reinstall the item.

REPAIR means to perform the work required to restore the specified item to its undamaged standard condition and may not require removal or separation into its component parts.

MODIFY means to alter the specified items in accordance with the specifications, Maintenance Instructions, applicable drawings, and/or instructional letters.

CHECK means, by sight or by measuring instruments, determine if the specified item is in compliance with the specifications and/or appropriate maintenance instructions, instructional letters, and drawings.

GENERAL DATA

Models to be rebuilt	GP30, 35
Rebuilt model designation	GP26
Horsepower	2600 ± 50
Engine	16-645-D3A
Main Generator	D32/D14
Auxiliary Generator	18 KW
Traction Motors	GE-752
Air Brake	26L Uniplate
Sand Capacity	56 Cu. Ft.
Fuel Capacity	2250 Gal.
Cooling Water Capacity	275 Gal.
Lube Oil Capacity	243 Gal.
Gear Ratio	74:18
Weight (total loaded)	261,000 ± 2,000 lbs.

Main Frame

GP30:

1. Relocate the single traction motor blower duct to the left side and install inlet chute per Dwg. _____.
2. Remove duct from right side.
3. Install walkway tread plate on right side in kind with the existent tread plate.
4. Lower handrails on right side to compensate for lower walkway.
5. Delete walkway light on right side.

Both GP30 and GP35:

1. Strip all component parts except main reservoirs.
2. Sandblast - ensure that all pipes to be reused are plugged or capped.
3. Inspect for cracks, wear, and damage:
    a. Center castings
    b. Air ducts
    c. Fuel tank supports
    d. Equipment mounting pads - plug all dowel holes
    e. Piping around clamps and where pipes pass through frame
4. Repair all damaged and worn areas.
5. Check frame alignment - straighten as required.
6. Check draft gear pockets - return to standard dimension as required.
7. Rework in kind or install new uncoupling levers (as required) per Dwg. _____.
8. Install anticlimb on front per Dwg. _____ with hook for holding jumper cable.

Main Frame - Continued

9. Qualify hinged ramp on rear.
10. Install insulated cable cradle, 8472802, under rear ramp.
11. Modify end plates front and rear per Dwg. _____ to:
    a. Cut out top corners
    b. Delete inset - make flush
    c. Cut hole for lifting eye - reinforce top of eye
    d. Locate trainline receptacle and dummy receptacle in endplate
12. Qualify endplate supports (install as required).
13. Install snow plow pilot per Dwg. _____ - front end.
14. Install plain plow pilot per Dwg. _____ - rear end.
15. Qualify corner steps and step skirts - retain in kind.
16. Install light on step skirt to focus on bottom step at each corner per Dwg. _____
17. Retain grab iron arrangement at each corner in kind.
18. Retain handrail design in kind (except as noted on the GP30).
19. Qualify channel type handrail stanchions.
20. Manufacture and install bendaway stanchions at each end per Dwg. _____.
21. Inspect and clean inside traction motor air ducts.
22. Install toilet drain per Dwg. _____ with floor flange, Vapor 17190156 or Automatic Equipment 976-4-1, and quick disconnect, Vapor 71790100 or Automatic Equipment 976-4-6.
23. Install floor drain per Dwg. _____ with drop-in loose fitting plug and chain.
24. Install aspirator drain in main generator sump per Dwg. _____.

Main Frame - Continued

25. Renew rubber seal under main generator to provide air tightness for inertial filter compartment.
26. Install floor plate over sump in area behind the high voltage cabinet per Dwg. _____.
27. Renew traction motor underframe leads using Neoprene cable cleats, B-14125, furnished by URE Service.
28. Install PPC-12222 tri-headed 27 point trainline jumper cable and relocate existent receptacle to use as dummy receptacle per Dwg. _____--delete all other receptacles.
29. Qualify panel below belt rail for electric emergency fuel shut-off button.
30. Qualify walkway lights--front, rear, and at step-up on left side.
31. Renew all underframe piping less than 3/4" I.P.S. with rigid copper tubing. All other piping should be qualified and retained in kind; relocate angle brackets on each end for mounting flush on end plate.
32. Install all new trainline hoses and brake cylinder hoses.
33. Renew trainline cut out cocks as required--must be brass, ball type with locking handles.
34. Qualify brake pipe angle cock--must be vented ball type, 8416261.
35. Install high voltage cabinet air filter housing, 8348504, per Dwg. _____.
36. Qualify rerailer holders underneath belt rail at center of rear truck each side or install new (as required) per Dwg. _____.
37. Qualify chain trough; renew as required per Dwg. _____.

(1) 38. Ensure that engine air box drains are open. Pipe to area below frame and outside rail area; delete retention tank.

Fuel Tank - 2250 Gallon

1. Remove and steam.
2. Sandblast.
3. Cut open top of tank.
4. Inspect interior for loose or worn plates, for cracks and any other possible damage (repair as required).
5. Thoroughly clean interior of tank.
6. Reweld tops back in position.
7. Water test for leaks and ensure that all water is removed.
8. Rework long fuel level sight glass gauges, 8243328, with calibration plate, 8326472, on each side of front of tank.
9. Qualify and renew glass in topping gauge; qualify calibration plate, 8340641.
10. Install drain valve at bottom front of tank per Dwg. 7323.
11. Delete flame arrester and vent crossover pipe (GP30--relocate 2" vent pipe per Dwg. _____).
12. Install one vent filter, Farr B-36253, with cartridge, 5-36272. (must not drain on rail)
13. Install reworked (renew as required) Houston fuel fill system: coupler, H-1023; cap, H-1024; screen, 8062960; pilot valves, H-1029-C; and aeroquip hose.

(2) 14. Delete air box drain retention tank and drain piping.

Draft Gear and Coupler - In Kind

1. Dismantle, clean, and inspect for cracks, wear, and damage.
2. Weld and machine yoke and coupler back to standard.
3. Renew all pins, bushings, and rubber pads.

(3) 4. Rework coupler carrier. "F" couplers require spring loaded carrier, 8460570.

Note: GP30's are equipped with M381A gear and "E" coupler with alignment control.

(3) Some GP35's are equipped with M380A gear and "F" interlocking with alignment control.

(3) Couplers must be the same type on each end of locomotive.

Cab - Short Hood (Low Nose)

GP30

A. Strip cab and nose of all components.

B. Remove cab and nose - scrap cab.

C. Manufacture new cab per Dwg. _____--with boxes for five (5) batteries on right side and three (3) on left side.

D. Modify low nose per Dwg. _____ for:

1. Extending nose forward _____ inches

2. Installation of new larger sand tanks with round filler necks and lids

3. Installation of collision post per Dwg. _____.

4. Relocation of handbrake housing

5. Removal of hot water cab heater vent

6. Installation of headlight on low nose

7. Division of nose into toilet compartment and water cooler alcove with door in between per Dwg. _____.

8. Installation of hinged sand trap compartment doors per Dwg. _____ .

E. Mount cab and nose on frame per Dwg. _____.

GP35

A. Strip cab and nose of all components.

B. Remove cab and short nose.

C. Modify cab and nose per Dwg. _____ for:

1. Installation of unitized side windows

2. Installation of electric cab heat:

a. Delete vents for old hot water heaters

b. Delete recess in front wall used for old cab heater

3. Installation of recessed steps for access to alcove

Cab - Short Hood (Low Nose) - Continued

4. Relocation of piping to emergency brake valve to avoid water cooler
5. Installation of new larger sand tank
6. Installation of new collision post
7. Installation of headlight on low nose
8. Division of nose into toilet compartment and water cooler alcove per Dwg. 8156
9. Relocation of hand brake housing
10. Relocation of access door to modulite panel compartment to outside - blank off openings in front cab wall

D. Remount cab in original position - nose will be ___ inches forward of original position.

Both GP30 and GP35 (unless specified otherwise)

1. Install new insulation and qualified ceiling sheets in cab (renew only as required). Install new insulation and perforated metal in top and sides of alcove, and in door and wall between toilet compartment and alcove.
2. Install cab ceiling lights, 9096838.
3. Install 1" Benelex cab flooring.
4. Install cab floor to nose steps with handrail per Dwg. 8441.
5. Install FRA Part 223 certified glazing - Type I for front and rear facings, J. T. Nelson NV-916.
6. Install unitized side windows, J. T. Nelson Co. 35025, with Type II polycarbonate glazing (ref. Dwg. B100632 Rev. B - includes one piece armrest, 8314268).
7. Install reworked (new as required) cab doors with inside latch, 8154876, outside latch 8284665, and safety hooks for both doors.
8. Install rubber door bumpers, 8024232, to prevent doors striking handrails.

Cab - Short Hood (Low Nose) - Continued

9. Install rail mounted cab seats - one on engineer's side - 2 on fireman's side - with a stop on fireman's side to prevent seat from striking heater.

10. Install electric cab heat. Required items:

    1 each Prime PM-5006-4 Heater (Engineer's side)
    1 each Prime PM-5006-6 Heater (Fireman's side)
    2 each Prime PM-5002 Auxiliary Heaters
    2 each 8458724 Circuit Breakers 30A
    2 each 8414231 Circuit Breakers 50A
    2 each 8298939 Switches
    2 each 8469858 Name Plates
    1 each 9505334 Hose
    2 each 8166524 Clamps

11. Install Ajax 685 water cooler in alcove area--left side.

12. Install cup dispenser per Dwg. _____.

13. Install new rag box in alcove--right side.

14. Install console controller (ref. control stand section).

15. Install Barco SIS-800 speed indicator, 50-06755-01.

16. Remanufacture hand brake "in kind", 8303000, and install on L side of short nose. Appropriate chain is 8303017 (11 ft.). Qualify and reinstall chain guard inside nose area.

17. Install cab accessories:

    a. Federal Card Holder - PPC 12182
    b. Air Inspection Card Holder - PPC 12208
    c. Flag, Fusee, Torpedo Holder - PPC-50026-14
    d. Dry Chemical Holder - PCC-14433
    e. 24 Hour Trip Inspection Holder - PPC-11437
    f. Fire Extinguisher
    g. Decal "Procedures for Starting and Shutting Down Diesel Engine:
    h. Decal showing cooling system drain valves
    i. Decal indicating cab glass in compliance with FRA Part 223

18. Install clean cab features per Dwg. 8264:

    a. Pull handle and rubber hinge guard for cab doors, kit 9087001
    b. Head bump pads - 2 each 9312193 and 1 each 9312229
    c. Rounded unitized sash latches, kit 9099040 (included in unitized side window units)

Cab - Short Hood (Low Nose) - Continued

d. Rubber horn grip - 9099639
e. Padded sun visor - 9331382
f. Plastic wiper motor covers - 5 each 9319901 - 1 each 9088464
g. Rubber grip for wiper motor handle - 9099089
h. 2 coat hooks on front of HVC - top center door - per Dwg. _____.
i. Recessed windshield wiper valves with piping in between wall thicknesses

19. Install qualified emergency brake valve in recess in L front cab wall.
20. Install Salem wind deflectors on both sides: No. 652 with mirror in front positions, No. 650 W/O mirror in rear positions.
21. Install Salem 629-000 metal cab awnings (use existing brackets if possible).
22. Install L shaped handhold on left side of nose per Dwg. B-100182.
23. Install new lift-off style air brake compartment and battery box doors (battery box sizes - 5 trays on R, 3 trays on L with removable front bars on battery tray racks).
24. Qualify round sand filler lids and screens on GP35 units. Install new on GP30 units.
25. Install PPC-11200 Oscitrol Emergency red headlight on number box.
26. Install qualified headlight assembly, 8218906, on low nose.
27. Install headlight resistors, 8425858,--headlight voltage should be dim 14, medium 22, bright 30 (variance +1 -0).
28. Install new style class lights, 8355678.
29. Install Salem 672-100 ventilators on right side in vertical position--one in toilet compartment and one in alcove per Dwg. 8156.
30. Qualify (renew as required) radio antenna mounted on top of cab.
31. Reinstall qualified Leslie horn on top of cab (renew with Nathan 3 chime type only as required) per Dwg. _____.

Carbody - (Long Hood) and Inertial Filter Compartment

1. Remove hood - strip out all components.
2. Sandblast.
3. Qualify (renew as required) all door hinges.
4. Qualify (renew as required) all door latches.
5. Rework shutter assemblies and mechanism - modify to fail open.
6. Rework shutter screens.
7. Inspect and clean out radiator compartments.
8. Inspect and renew all rusted out sections.
9. Modify carbody per Dwg. _____ to eliminate dynamic brake hatch and grid extensions. (GP30 is modified to eliminate raised section)
10. Install roof hatches for power assembly change-out per Dwg. 8401.
11. Install new square style sand boxes per Dwg. _____ with outside access doors to sand traps.
12. Rework round sand box fill covers and screens. (GP30 - modify to round type)
13. Install bolted strips at panel near air compressor for air compressor removal.
14. Qualify modulite panel openings.
15. Qualify bulkhead, separating engine room from main generator compartment. Plug holes previously used for dynamic brake cables.
16. GP30 - Install engine ramps on right side per EMD P.L. 2510, page 1, Column A per Dwg. _____.

    GP35 - Qualify engine ramps.
17. Install reworked cooling fans - 2 each 48" fans and 1 each 36" fan. (See Cooling Fan Section.)
18. Install reworked radiator cores "in kind".

Carbody - (Long Hood) and Inertial Filter Compartment - Continued

19. Install aeroquip radiator vent hoses.

20. Install new conduit as required.

21. Renew all wiring.

22. Install new style class lights, 8355678.

23. Install new Salem magnet valves for sand control.

24. Qualify headlight, 8218906, (retain in horizontal position).

25. Install headlight resistor, 8425858 - voltage should be Dim 14, Medium 22, Bright 30 (variance of +1 -0).

26. Delete dynamic brake equipment.

27. GP30 - manufacture new inertial filter compartment per Dwg. _____ including:

(4) a. Install one door, right side, with gasket and latch same as SD-20 (ref. EMD P.L. 1045, Catalog 190, pages 1-3

b. Install new inertial filters:

Farr 29013 - right side

Farr 28776 - left side

c. Install new two each screen assemblies, 8354882 (bolt on).

d. Qualify engine air intake filter housing, Farr 36071 (8410667); check plenum area for cracked metal and/or welds.

e. Install new 12 each RC250 filter elements

f. Rework inertial filter blower and motor assembly (replacement motor is 3087168).

GP35 - Qualify inertial filter compartment including:

(4) a. Install one door, right side with gasket and latch same as SD-20 (ref. EMD P.L. 1045, Catalog 190, Pages 1-3)

b. Qualify inertial filters (remove and clean) replacement filters are same as listed above).

Carbody - (Long Hood) and Inertial Filter Compartment - Continued

c. Qualify two each screen assemblies, 8354882 (bolt on).

d. Perform items (d) (e) and (f) as listed above for GP30.

28. GP30 - install drain piping from inertial filter and blower housing per Dwg. _____ ___.

29. Install piping per Dwg. _____ to high voltage cabinet for checking pressure drops through inertial filters and through combination of inertial and engine air intake filters.

30. Install facility for chain and spare knuckle per Dwg.

31. Apply putty, sand, clean and prime.

Radiators - 6" Cores

1. Dismantle all radiator sections.
2. Rod out and clean all cores in vat.
3. Test core submerged in water tank with air pressure.
4. Leaking cores are re-soldered.
5. Fins are straightened.
6. Check for loose fins.
7. Side plates are repaired and soldered as required.
8. Delete radiator header screens.
9. Cores are re-assembled with roto blasted heads and straps.
10. Renew all gaskets.
11. Water hydro assembled radiator section at 50-60 PSI.
12. Apply remanufactured date tag.

Trucks - Gear Ratio 74/18 - Roller Bearing Type

(Ref. Axle, Elliptical Springs, and Journal Box sections.)

1. Dismantle truck assembly.
2. Sandblast frame and bolster.
3. Sandblast or roto blast: swing hanger, brake hangers and brake rods.
4. Visually inspect frame for cracks and worn areas; repair as required. (Wear limits are listed in ALCO MI 16010)
5. Tram frame and straighten as required.
6. Weld and grind pedestal jaws as required.
7. Weld and redrill traction motor support lug.
8. Renew all pins and bushings.
9. Renew all worn wear plates.
10. Install tested and matched coil springs.
11. Weld on metal pedestal liners as required, Alco 14111214.
12. Install reworked and tested (renew only as required) elliptical springs.
13. Install reworked brake cylinders.
14. Magnaflux swing hanger and renew bushings.
15. Rework brake hangers and straps.
16. Install qualified journal housings--drilled and tapped housing, Timken K-103584 in R #2 position, K-103581 in all other positions. (K-103584 may be used in any or all positions.)
17. Install qualified axle drive adapter on R #2 journal box--renew with Timken K-100289 adapter as required.
18. Rework or install new quik-just adjusters--Touchstone 22152-22A.
19. Install new 14" brake heads, GE 41C6109G3G1 and new 14" cast brake shoes, ABEX G-5179.
20. Rework gear cases renewing all seals; fasten with huck fasteners.
21. Install axle drive, Barco 50-04490-06, with paddle, Barco 50-04433-00, in R #2 axle position.

Trucks - Continued

21. Chamfer all brake lever openings.

22. Arrange for outboard sanding only.

23. Inspect bolster center casting for wear - renew wear rings and wear plate.

24. Qualify traction motor suspension rubber pack, renew as required with pack, 8339952.

25. Adjust coil springs shims for maximum locomotive height.

Axles - Wheels 74/18 Gear Ratio

1. Reflectoscope axle.
2. Inspect (Magnaglo) and qualify gear; replace as required with new or reprofiled 74-tooth gear.
3. Polish and roll support bearing area - turn, if necessary.
4. Mount new 40" wheels - AAR A-40 Class B using boiled linseed oil - Spec. ANSI/ASTM D-260.

(5) 5. Install new axles only as required. (Ref. specification Dwg. C-100001-B)

(5) 6. Apply repair-and-returned or UTEX Timken class "GG" bearing assemblies.

(5) 7. Install the following qualified (new as required) material:

a. Axle end cap, K-82740 (all positions) (replace any lubricant fittings with pipe plug)

b. Three each cap screws, K-83044 (all positions)

c. Locking plate, K-82781 (all positions)

d. Hex plug, K-82335 (all positions except R#2)

e. Spline drive plug, K-97426 (R#2 position)

Note: Old style (5" diameter bolt pattern) end cap assemblies should be replaced with specified type (new style 3-7/8" axle bolt pattern shown on Timken Dwg. 30496, line 14).

Journal Housings (Boxes) - Timken GG

1. Thoroughly clean housing.
2. Qualify wear plates. Chamfer top and bottom of new plates:

a. Equalizer seat wear plate, K-102735.

b. Housing pedestal wear plate, K-102733.

c. Lateral wear plate, K-102734 - Ensure a total lateral thrust of 1/4" (1/8" each side) between journal housing box) and pedestal.

Elliptical Springs -- Alco 1761197

1. Clean in hot tank.
2. Inspect for defects.
3. Check free height.

   If springs fail inspection or free height check, follwoing must be done:

   a. Cut band
   b. Reset leaves or manufacture new
   c. Quench and temper leaves
   d. Reband with new band
   e. Test spring

Equipment Rack

1. Qualify 7 element lube oil filter tank and install elements, 8345482.
2. Remove and clean relief valve and check spring tension; reinstall with new port cover and gasket (ref. EMD Pointer 1-10-66 and M1926).
3. Install new fuel strainer EMD 8341983, includes element, 9324489.
4. Qualify temperature switch manifold.
5. Install Sundstrand temperature switches with 3 pole plug - 8324136:

SW	Sundstrand P/N	Close	Open
TA	975-0485-002	155°	145°
TB	975-0485-003	160°	150°
TC	975-0485-005	170°	160°
ETS	975-0485-011	200°	190°

6. Install fuel oil preheater, 9517269, with thermostatic mixing valve, 9091415, per dwg. _____. (Note: No manual valves in line).
7. Qualify water tank and renew 7 PSI pressure cap, PPC 6213.
8. Remanufacture lube oil cooler EMD No. 8272136.
9. Remanufacture fuel pump and motor.
10. Install prime/start switch, 8441983.
11. Install air compressor control equipment with Salem 775 test fitting on air gauge (located in AC cabinet mounted R side of rack).
12. Renew conduit only as required.
13. Renew all wiring.
14. Renew all small copper tubing but large piping only as required.
15. Qualify primary fuel filter with sock filter, 8275432, and retain in vertical position.
16. Install qualified load regulator, 8378257 (ref. Load Regulator section).

Lube Oil Coolers - 8272136

Note: Same as GP40 style except for water inlet pipe, 8323690.

1. Dismantle assembly.
2. Clean grease and sludge from all cores.
3. Rod out tubes and clean cores in vat.
4. Test core submerged in water tank with air pressure.
5. Resolder leaking cores.
6. Straighten fins.
7. Check for loose fins.
8. Apply remanufacture date tag to core.
9. Degrease heads and all other parts.
10. Modify inlet baffle per EMD M.I. 9505 if required.
11. Reassemble coolers with qualified cores.
12. Renew all gaskets.
13. Water hydro test complete assembly at 80 PSI.

Engine - Model 16-645-D3A

Completely overhaul diesel engine, using same crankcase and oil pan with qualified parts (new as required). All dimensions and tolerances to be those specified by EMD.

1. Dismantle diesel engine.
2. Rework all component parts - dismantle, clean, inspect and renew all worn parts, seals, and gaskets:
   a. Water pumps - D3A type
   b. Lube oil pumps - scavenging and main bearing - D3A type
   c. Governor - convert to 12 point plug, 8424298, with pilot valve balance set at .87. Set for low idle feature and paint top cover red to indicate such.
   d. Governor drive
   e. Lube oil strainer - qualify - convert to 8269236 per EMD MI 9618 as required
   f. Crankcase protector - 8428395 (ref. EMD MI 259) - adjust reset limit to 35" H_2O (ref. EMD Pointer 10-13-80).
   g. Fuel filters - convert to spin-on type (as required) with elements 8423132, or approved equivalent.
   h. Turbo (ref. ICG MI Group 400) - unit exchange turbo UTEX No. 8296440 (18:1 ratio heavy duty turbo) - ensure that all GP30's have been converted from 20:1 ratio type to 18:1 ratio type - (ref. ICG MI 403). Install with hardware listed in EMD Pointer 8-12-68.
   i. Turbo air ducting - when hooking up air inlet hose, install retainer, 8384186 (ref. EMD MI Pointer 11-7-66).
   j. Turbocharger after coolers - remove, thoroughly clean, and test. After reinstallation, take a manometer reading to ensure proper air intake (ref. ICG MI 408).
   k. Soakback pump & motor - ensure that 3 GPM pump and 3/4 HP motor assembly, 8492180, is installed - rework or renew as required.

l. Soakback filter - 8338906 with element, 8330264 - work in kind or renew as required on GP30's. If replacement is required, replace 90 PSI relief valve with 125 PSI relief valve, 8340582 (ref. EMD MI 9537).

m. Turbo filter - must be current design filter, 8326029 with element, 8322064.

n. Lube oil separator - replace separator, 8287892, with new separator, 8448163. If separator, 8332584, is presently installed, it can be converted to 8448163 by replacing cover, element, and spring (ref. EMD MI 9576).

o. Auxiliary generator drive assembly

p. Crankshaft assembly -- D or E Class -- chrome plate as required or qualify as follows:
   (1) Remove all plugs and clean oil passages.
   (2) Magnaglo inspection for cracks.
   (3) Measure all journals - must be standard dimensions.
   (4) Inspect and polish all journals.
   (5) Install bolt on stub end as required (Dwg. D-100112).
   (6) Install with new EMD main bearings and EMD connecting rod bearings.

q. Camshaft assemblies:
   (1) Polish all journals and cams - polydyne ground.
   (2) Check run out.
   (3) Renew all bearings.

r. Layshaft assembly:
   (1) Inspect and straighten - remove burrs.
   (2) Spray weld, grind, and polish all worn areas.

s. Power assemblies (645) - install using head seat rings, 8419438:
   (1) Cylinder heads with inconnel valves. Mount to liner with Parker 698-058 gasket assembly.

(2) Pistons with rings for chrome liners, Koppers set 70417A80

(3) Liners - chrome plated

(4) Connecting rods

(5) Carriers

(6) Wrist pin

(7) Rocker arms

(8) Valve bridges

(9) Overspeed trip mechanism and injector control linkage

t. Injectors: 5229250 (UTEX No. 8378046)

3. Check and rework the crankcase and oil pan assembly:

a. Check "A" frame bore - line bore as required.

b. Inspect crankcase for cracks and worn areas.

c. Inspect thrust collar surfaces.

d. Inspect main bearing cab serrations - reserrate as required.

e. Spot face main bearing caps for hardened flat washers, 8412532; use plain nuts, 8408684, for installation.

f. Renew lower liner inserts.

g. Tap all bolt holes - any that do not qualify, install new thread inserts, RKK, furnished by Tridair Industies.

h. Qualify cylinder relief valves.

i. Rework all handhold covers - 8391430 for openings behind starting motors, 8335840, for all other openings (no aluminum covers).

4. Reassemble accessory drive end with:

a. Damper assembly, 9323945 - new hydraulic gear type

b. Reworked accessory drive gear assembly

c. Qualified gears

d. Reworked and tested lube oil relief valve

e. Qualified lube oil manifold assembly

f. Reworked overspeed trip assembly

g. Qualified counter weights

h. Qualified accessory end housing and overspeed trip housing and install with oil seal sleeve, 8143441, and vitron seals, 9095686, in between.

5. Reassemble rear end with:

a. Qualified gears - turbo drive gear assembly should be spring type, 8449231.

b. Qualified counterweights

c. Idler stubshaft - modify to 8470154 type (as required) for increased oil flow (ref. EMD M1 9587).

d. Qualified flywheel, 8164605

6. Reassemble top deck assembly with:

a. Qualified top deck frame and piping

b. Covers with new gaskets and qualified hinges and latches

7. Install qualified water manifold pipes and jumper lines.

Weld braces between cylinders 4 and 5 and between 13 and 14.

8. Water hydro test engine with house pressure.

9. Install qualified "p" pipes and check alignment.

10. Set injector racks.

11. Set injector timings.

12. Set exhaust valves.

13. Apply main bearing badge plate (Dwg. J70437), and injector timing badge plate, _____ to right side of engine.

14. Take cylinder head clearance lead readings.

15. Fill out all engine rebuild data sheets.

16. Load test engine in test cell per instructions in Load Test Cell Procedures dated May 14, 1980.

17. After installation on frame:

    a. Install engine sump drain per Dwg. _____.

    b. Ensure that air box drains are open and reconnect to engine. Pipes should drain into retention tank on back of fuel tank if equipped or outside rail area if not equipped.

    c. Install load regulator oil lines to engine governor using aeroquip hose.

Exhaust System

1. Remove, clean, and qualify exhaust manifolds.

2. Remove (cut out) the dividing baffles in the manifold legs if applicable.

3. Renew all expansion joints and gaskets:

   3 each Farr 43015 - Joint Assembly
   1 each Farr 45016 - Joint Assembly (Joint Assembly comes with Farr gasket, 45725 which must be used with this Joint Assembly)
   7 each 8309214 - Gasket
   1 each 8309212 - Gasket

4. Install turbo screen assembly, 8328188 (UTEX No. 8393922) reworked by TRW Inc.

5. Qualify (renew only as required) heat shields: reinforce bottom section that fits into tabs. (Ref. EMD P.L. 172 Column D--curved leg manifolds.)

6. Qualify, clean, and reinstall the exhaust duct.

7. Modify the eductor pipe for improved crankcase ventilation. Material required for modification includes the following (ref. EMD MI 9576):

   1 each 9502409 Outer Eductor Pipe
   1 each 9502412 Inner Eductor Pipe
   1 each 8271729 Gasket
   4 each 181380 Bolt
   4 each 8289127 Nut
   1 each 8306958 Gasket
   1 each Farr (42525) Oil Separator Assembly (or Farr kit to convert to this type separator)--See Engine Section, Item 2n.
   1 each 8271726 Cover Plate
   1 each 8262488 Gasket
   1 each 8028760 Gasket

Air Brake Schedule - 26-L with Uni-Rack

1. Remove air brake equipment and send to Woodcrest for reworking.

2. Reinstall equipment on NYAB unirack, 753637.
   List of required gaskets:

1	557395	26-C BV
1	557237	SA-26 BV
1	558987	MU-2A
3	550992	H-5
1	93840	H-5
1	97368	J-1 Relay
1	557924	26-F
1	558534	F-1
1	562614	A-1
1	562872	P-2-A Blanking plate
2	93986	KM2 VV
1	557173	Quick Release on 26-F

3. Install air brake equipment and pipe per schematic Dwg. _____.

4. Install ball type vented 1-1/4" angle cock, 8416261, on brake pipe trainline.

5. Delete brake cylinder quick release valve.

6. Install KM-2 vent valves - 705435 - one on unirack, one under frame near rear.

7. Install 19/64" orifice plate, 8466371, at automatic brake valve pipe (#30) in lieu of A19 adapter.

8. Install brake valve exhaust pipes through floor per Dwg. _____.

9. Install Salem test fitting at the following locations:

   a. Main reservoir gauge - use 774-3

   b. Air compressor control switch - use 775-3

   c. Emergency sand switch - ESS - use 775-3

   d. Pneumatic control switch PCS - use 775-3

10. Install compression fittings on all copper tubing.

11. Replace all trainline air piping less than 3/4 IPS with rigid copper tubing.

12. Install qualified emergency brake valve in "clean cab" recess Dwg. _____.

13. Install blanking plate, 750868, in lieu of P-2-A valve.

14. Install 26-F control valve.

Air Brake Schedule - 26-L with Uni-Rack Continued

15. Install F-1 selector valve for compatible operation with 6-BL equipped units.

16. Install MU2A valve.

Air Compressor - WBO - Reduced Maintenance Base

1. Dismantle and clean all parts.
2. Renew all bearings.
3. Renew all seals and gaskets.
4. Renew piston rings.
5. Install Triangle drilled HP connecting rod - new wrist pins as required.
6. Install EMD Compressor Sediment Removal Kit - 8498379.
7. Remanufacture cylinder head assemblies.
8. Replace crankcase breather valve assembly with reed type, 9519501.
9. Install honed-to-standard-size cast iron cylinder liners - install sleeved liners as required.
10. Remanufacture intercooler.
11. Install new shims and check crankshaft lateral.
12. Install PPC dip stick, PPC 10516.
13. Fiberglass filter EMD 8402067 - or equivalent.
14. Install aeroquip quick-disconnect fitting 5602-4-4 for checking oil pressure.
15. Install Triangle full-flow oil system:

    a. Oil pump/filter kit - 65511
    b. Crankshaft with 180° conversion on oil pump eccentric
    c. LP Piston - 6344)
       Hp Piston - 6342) Includes complete ring set - 6604

    Note: Return crankshaft and oil pump to Triangle for modification.

16. Load test four (4) hours.
17. Install on locomotive and install water piping per Dwg. L-1258 using 2 each 3-way valves NYAB 705690 (N-9852).
18. Install qualified coupling drive, 8236433, with qualified or new rubber joints, 8234958.

Main Reservoir

1. Qualify tanks; remove only as required for repairs; plug any openings to keep out sand.
2. GP30 - Replace 2" check valve with flat type, 8331916, with 2 each gaskets 8097592 at inlet flange of No. 2 main reservoir.

   GP35 - Qualify flat check valve, 8331916.
3. Qualify after cooler piping and air compressor discharge piping.
4. Rework (renew only as required) J-1 safety valve set for 146-148.
5. Install horizontal check valve, Crane 76E, 150 lbs., with 1/4" orifice in main reservoir equalizing trainline.
6. Install Salem 580-H drain valves on both main reservoirs.
7. Install Salem 818-1-20 auxiliary air filter.
8. Install Salem 824-070 filter to brake system - wire for constant 74 volts.
9. Schematic piping reference, Dwg. _____.
10. Ensure that tube assembly, 8144051, is installed at the outlet flange of each reservoir tank. No tube assembly is required at the inlet flange of either reservoir tank.

Sanding - Electric

1. Install sanding piping per schematic, Dwg.____-outboard sanding only.
2. Install Salem 277-2 sand traps.
3. Install Salem 500-BS control valve.
4. Remove all old trainline sanding air piping.
5. Sand capacity - 28 cubic feet per tank.

Air Horn

1. Rework Leslie (3 or 5 chime) horn and reinstall. (Install Nathan P-14-R2 horn as replacement as required)
2. Mount on top of cab per Dwg. _ _____.
3. Install modulating horn valve - 8318019, with vertical handle, 9099639, in control stand.
4. Renew horn mounting (rubber) PAD 8185843.

Crossing Bell

1. Install bell L side long hood rear of inertial filter.
2. Install Salem 506 double acting bell ringer.
3. Install in control stand, Salem 316-1A bell valve.

Hand Brake

1. Rework "in kind" 8303000.
2. Reinstall "in kind" - on left side of low nose in recessed area.

High Voltage Electrical Cabinet

1. Manufacture new frame per Dwg. 8600.
2. Install reworked or new components with all new wiring per electrical schematic Dwg. _____ and wire running list _____.
   (Search is deleted, low idle feature is included).
3. Install filter, 8458504, for pressurization of cabinet.
4. Install doors for air tightness:
   a. Door latches - RH 8425276 and LH 8415277
   (6) b. Hinge assembly - Shop made per Dwg. _____
   c. Rubber door seal - 8421197
5. Apply urethane foam insulation, 9505997, to back of doors. Apply so the black urethane film is exposed.
6. Install three stems, 8358944, per Dwg. _____ and nameplate, 8465098, for manometer tests.

Material List of Components:

	1 each	8360045 - Relay - GR
	1 each	8443302 - Relay - AGPR
	1 each	8421231 - Relay - NVR
	3 each	8357416 - Relay - ER - PCR
	3 each	8357418 - Relay - PR - FOR - RER
(6)	7 each	8363168 - Relay FPR - WL - MCOX - RVF - NIR - DSR - OSR
	2 each	8357417 - Relay - FPCR - TLTR
	1 each	8276599 - Relay - TDS
(6)	4 each	8357415 - Relay - CDR - TSR - COR - THL
	1 each	8349285 - Relay - TLTD
	1 each	8354091 - Term. Board - 8 PT.
	1 each	8425275 - Capacitor - CA33
	1 each	8158951 - Rectifier - CR17
	30 each	8431017 - Rectifier
	1 each	8398604 - Resistor - RE4
	1 each	8429166 - Resistor - RE5
	1 each	8362811 - Resistor - RE1
(6)	1 each	8361774 - Relay - MR

High Voltage Electrical Cabinet - Continued

(6) 1 each - 8227212 - Resistor - RE31 - 275 OHM
1 each - 8225410 - Resistor - RE2
1 each - 8491400 - Resistor - 165 OHM RE6
(6) 1 each - 8206938 - Resistor - 1000 OHM RE3
(6) 1 each - 8368351 - Resistor - 1000 OHM RE30
(6) 4 each - 8239506 - Resistor - 10 OHM RE32, 33, 34, 35
1 each - 8254056 - Contactor - BF
1 each - 8244055 - Contactor - SF
1 each - 8363473 - Rheostat - 1000 W - RH8
1 each - 9316438 - BF - SCR
1 each - 9317893 - Batt. Chg. Assy.
1 each - 8458698 - CB - 15A - Aux. Gen. Fld.
1 each - 8433382 - CB - 60A - Batt. Fld.
1 each - 8458724 - CB - 30A Cab Htr.
2 each - 8414231 - CB - 60A Cab Htr.
1 each - 8458738 - CB - 40A - Control
1 each - 8458739 - CB - 15A - Elect. Device
1 each - 8458741 - CB - 15A - 3 pole - Fuel Pump
1 each - 8458726 - CB - 30A - Hd. Lt.
1 each - 8458742 - CB - 30A - 3 pole - Local Cont.
2 each - 8458724 - CB - 30A - Lights - Turbo
1 each - 8458739 - CB - 15A - Radio
1 each - 8458739 - CB - 15A - Water Cooler
1 each - 8458735 - CB - 3A - Reversing Control
6 each - 8458534 - Contactor - P1-P2-P3-P4-S13-S24
1 each - 8453176 - Motor Assembly
4 each - 8453175 - Switch - RVF 1-2 RVR 3-4
1 each - 9317523 - Shunt - M.G.
1 each - 8333318 - Panel - Shunt
1 each - 8415485 - Contactor - GS
6 each - 8404148 - Switch - Lts. - Plat. Lts., Engine Room Lts., number Lts., and Class Lts.
1 each - 8025368 - Switch - Batt.
1 each - 8373198 - Switch - GRCO
2 each - 8112684 - Blocks - Test
1 each - 8172209 - Switch - Fuse Test
1 each - 8228323 - Receptacle - Fuse Test
2 each - 8004539 - Holders - Fuse - 400A
2 each - 8004556 - Holders - Fuse - 150A
1 each - 8118495 - Shunt - Batt. Chg.
1 piece - 25/270-30-7 - Micarta Board - 14" x 15" x 1/2"
6 pieces - 25/270-32-3 - Micarta Board - 4" x 4" x 1"
1 each - 50-06780-00 - Barco Speed Trans.
2 pieces - 21/105-05 - Copper Bus 3/8" x 4" x 14"
4 pieces - 21/105-02 - Copper Bus 1/4" x 2-1/2" x 7-1/4"
1 each - 8433191 - Switch Isolation
1 each - 8257725 - Plate - Name, Iso.
1 each - 8363900 - Switch - TMCO
1 each - 8464400 - Plate - Name, TMCO
1 each - 8384650 - Switch - EFCO
1 each - 8370564B - Plate - Name EFCO
1 each - 8463522 - Switch Gr. Reset

High Voltage Electrical Cabinet - Continued

6 each - 8438423 - Holders, Lamp, Ind. Lts.
1 each - 8243533 - Switch, Hd. Lt. MU
1 each - 8182169 - Plate - Name, Hd. Lt. MU
1 each - 8353921 - Term. Board, 20 pt. Stud
12 each - 8292938 - Term. Board - Fast on, single
1 each - 8295501 - Ammeter, Batt. Chg.
3 each - 9310498 - Contactor - FS
3 each - 8330086 - Interlock
(6) 2 each - 8466026 - Capacitor - 500 MFD - CA31-32-34-35
(6) 1 each - 8225149 - Capacitor - 1000 MFD - CA36-35
3 each - 8476006 - Rectifier Kit
1 each - 8438424 - Lens - Red
1 each - 8438426 - Lens - Amber
1 each - 9438425 - Lens - Clear
1 each - 8438427 - Lens - Blue
2 each - 8438428 - Lens - White
1 each - 8384102 - Resistors - MFS)
1 each - 8384103 - Resistors - MFS) Qualify and reuse GP-35 resistors
1 each - 9317607 - Module Compartment
1 each - 9317758 - Module Card - EC
1 each - 8440256 - Module Card - VR
1 each - 8441080 - WS10 Module Card
1 each - 8461049 - RC1 Module Card
1 each - 8464683 - Test Panel Assy.
4 each - 8465002 - Transductor - WS
6 each - 8463666 - Bus Bar - Reverser
6 each - 8463667 - Bus Bar - Reverser
2 each - 8465477 - Bar - Bus - GS - GP
1 each - 8465476 - Bar - Bus - GN
1 each - 8463949 - Bar - Bus
1 each - 8465478 - Bar - Bus
1 each - 8465479 - Bar - Bus
6 each - 8441589 - Bus Assy.
1 each - 8465480 - Bar Bus
1 each - 8465481 - Bar Bus
8 each - 8463787 - Bus bar Assy. - Transductor
1 each - 8373199 - Cover 9 GECO SW.
1 each - 8227212 - Resistor - RE31
1 piece - 25/270-32-3 - Micarta Board - 1" x 15-1/8" x 19-3/4"
1 piece - 25-270-32-3 - Micarta Board - 1" x 4" x 8"
1 each - 8352859 - Panel
1 each - 8221444 - Shunt
1 each - 8237561 - Insulation
4 each - 8032761 - Nut
22 each - 8423444 - Insulator Standoff
Barco TCP panel, 50-06780-00 (see Speed Indicator/Transition System section)
1 each - 9088967 - Nameplate Isolation Panel
1 each - 8464042 - Nameplate Circuit Breaker panel

7. Paint interior white.

Isolation Switch Panel

1. Manufacture new panel per Dwg. _____.
2. Install all new wiring.
3. Install the following new switches:
   a. Isolation switch, 8330988, with nameplate, 8247725
   b. Remote headlight switch, 8439118, with nameplate, 8182169
   c. Traction motor cutout switch, 8366391, with nameplate, 8404400
   d. Platform, engine room, class (front and rear), and number (front and rear) light switches, 8404148, with appropriate nameplates
4. Install the following indicator lights using lamp, 8421182, and holder, 8438423:
   a. ETS--Hot Engine--Red Lens--8438424
   b. LOS--Governor Shutdown (low oil pressure)--Amber Lens--8438426
   c. NVR--No Power--Blue Lens--8438427
   d. GR--Ground Relay--White Lens--8438428
   e. Test--Load Test--Clear Lens--8438425
5. Install the following miscellaneous items:
   a. Battery charging indicator, 8295501
   b. Emergency fuel stop button, 8384650, with nameplate, 8370564

Reverser

1. Install motorized reverser:

    a. Switch Assembly, 8453175 - 4 each

    b. Motor Assembly, 8453176 - 1 each

    c. Bar Assembly, 8463666 - 6 each

    d. Bar Assembly, 8463667 - 6 each

Power Contactors

1. Install 1200 amp magnetic power contactors:

    8458534 (6 each)

AC Voltage/Air Compressor Control Cabinet

1. Strip all components from cabinet.

2. GP35--qualify cabinet--repair as required.
   GP30--manufacture new cabinet or modify to GP35 design per Dwg. _____.

3. Install reworked or new components:

3 each - 8307357 - Contactor Fan
2 each - 8363168 - Relay CCR - CRL
1 each - Salem 815-816TL - Magnet Valve CC/SH
3 each - 8446092 - Interlock Kit - Fan Contactor
1 each - 8328444 - Switch - CC
6 each - 8439559 - Fuse - Cooling Fan
(7) Delete
(7) Delete
2 each - 8292938 - Terminal Board
1 each - 8260287 - Receptacle
1 each - 8280439 - Cover Receptacle
2 each - 8375607 - Rectifier CR80 - CR81
(7) 1 each - 8452907 - Valve Shutter Control - Vented
1 each - 8055816 - Gauge - Air Pressure
1 each - 572468 - Valve, Compressor Control Switch
1 each - 8332591 - Board Terminal - 1 Point
1 each - 8332589 - Insulation Board Mounting
(7) 2 each - 8471148 - Insulator standoff
(7) 2 each - 8472468 - Angle Insulation
(7) 2 each - 8462469 - Angle Insulation
(7) 3 each - 8450816 - Bar Bus
(7) 3 each - 8450815 - Bar Bus
(7) 1 each - 8462812 - Bar Assy. - lower
(7) 1 each - 8472813 - Bar Assy. - upper

Wire, Cable, Conduit - Terminal Boards

1. Fast-on terminals - except No. 8 wire size or larger - stud type.
2. Minimum size control wire to be #14 AWG. Smaller size wire acceptable only if furnished as part of OEM accessory equipment by outside vendor.
3. No splices are to be pulled into conduit. All connections are to be made at Terminal Boards where possible, otherwise only in junction boxes or fittings.
4. Whenever wires or harnesses are laid on or bent around edges of metal or other material, anti-chafing protection shall be provided between the wires and the edges.
5. All wires and cables to be identified at each termination. Wire markers must be suitable for diesel use; oil and solvent resistant.
6. Install AC wiring and DC wiring in separate conduits.
7. AAR Standard 27 wire trainline. All trainline wires to Be #14 AEG except wire Nos. 4, 13 and 25 which are to be #12 AWG. Shroud type MU pins are to be used. Connection for the MU's shall be made at the main terminal board and the terminal board located at the load regulator.
8. Renew all high voltage power cables ITT Hypalon insulation.

(8) 9. All wire to meet AAR Spec. 589, except high temperature wire meet AAR Spec. 590. Multi-conduction cable to meet AAR Spec. 560.2. All wire size #8 and smaller should have irradiated cross linked polyolefin (exane type) insulation.

10. Delete terminal board in junction box at each end of frame for M.U. receptacle. The junction box will remain in the frame.

Main Generator - D-32 - D14

1. Stator is to be rewound to D-32 - shunt field.
2. Armature is to be rewound to D-32.
3. Armature is assembled using new bearing and gaskets.
4. Main head bushing is checked and new case hardened bushing installed as required.

(9) 5. Delete

(9) 6. Delete

(9) 7. Delete

8. Latest sytle D32 constant pressure brush holder, 8331071.
9. Install new brushes 8330994.
10. Install rewind kit in A.C. frame.
11. A.C. frame is dipped in varnish.
12. A.C. frame is baked 8 hours at 300° F.
13. Remanufacture slip rings and renew brushes, 8271183.
14. Install new air box 8331016.
15. Hi-pot main generator after final assembly.

Auxiliary Generator - 18 KW/Traction Motor Assembly

(10) 1. Assemble auxiliary generator and blower assembly per EMD MI 3612 (ref. Traction Motor Blower section)

(10) 2. Dynamically balance the armature per EMD MI 3706 Rev. C.

3. Electrically test auxiliary generator.

4. Install conduit for auxiliary generator from rear top of HVC--connection at HVC must be sealed air tight.

Traction Motors - GE-752

1. Cob blast armature and frame.
2. High frequency test armature - if it does not pass test, it will be replaced with rewound armature.
3. Armature placed in varnish vacuum impregnator 4 hours.
4. Armature baked 8 to 10 hours at 300° F.
5. Armature commutator turned in lathe.
6. Armature commutator slots are undercut.
7. Armature commutator slots are cleaned and vee'd.
8. Armature dynamically balanced.
9. Armature is assembled using new or factory remanufactured bearing assemblies, new gaskets and new inserts.
10. Frame is gaged at all critical points.
11. Frame is welded and machined at points as required.
12. Frame coils and leads are checked and renewed as required.
13. Frame is dipped in varnish.
14. Frame is baked 8 to 10 hours at 300° F.
15. Brush holders are remanufactured.
16. Install new brushes, GE41A233415P4.
17. Install new pinion as required.
18. Traction motor tested and run for one hour.

(11) Note: UTEX motors should be installed in GP26's whenever available releasing Paducah Shop rebuilds to the field.

Fuel Pump and Motor

1. Dismantle and clean.
2. Qualify field coils.
3. Qualify armature, turn, undercut, saw and "V".
4. Insulate with "Dolph" insulation spray.
5. Renew bearings, qualify end bells.
6. Renew brushes, 8078488.
7. Assemble and test run.
8. Remanufacture fuel pump.

Batteries

1. See cab section for details about the battery box.
2. Paint interior of battery boxes with:

Coopers Creek Chemical	ICG stock item
C-4 Gloss Black M-202	Elass 47/440
Asphalt Protective Coating	

3. Install batteries - 425 AMP hour - 25 plate cells.

Traction Motor/Main Generator Blower System

GP30

1. Delete duct directed toward right side of locomotive.
2. Renew main generator blower housing, 8332282, on traction motor blower housing 8332297.
3. Assembly traction motor/blower assembly using:

   1 each 8332631 Traction motor air duct
   1 each 8332268 Flexible duct--Traction Motor Duct
   1 each 8332268 Flexible duct--Main Generator Duct
   1 each 8332968 Ring
   1 each 8332949 Ring
   2 each 8332284 Ring
   (Ref. EMD P.L. 3611 P. 5)

GP35

1. Remove blower assembly, clean and qualify parts.
2. Reassemble and reinstall in kind.
3. If traction motor blower wheel requires renewing, use 36 blade wheel, 8489204.

Load Regulator

1. Remove and clean.
2. Renew brushes and check brush contact and spring tension.
3. Qualify all parts.
4. Check that rheostat resistance is within limits.
5. Ensure that load regulator has already had the discontinued 100 ohm rheostat converted to a 1500 ohm rheostat. If not, convert by using Kit 8362988 per EMD M.I. 9542.
6. Reinstall in kind.

Cooling Fans - In Kind

1. Dismantle and clean.
2. Renew bearings.
3. Megger test windings.
4. Inspect rotor.
5. Assemble and test.

Note: GP30's currently have 2 each 48" 6-bladed fans and 1 each 36" fan.

GP35's currently have 2 each 48" 8-bladed fans and 1 each 36" fan.

When replacement is required for either unit, use:

2 each 48" 35 h.p. 8-bladed fans, 8310416

1 each 36" fan, 5526269

Console (AAR) Controller

1. Manufacture new control stand per Dwg. _____.
2. Install mechanism - EMD No. 9091052.
3. Install all new wiring.
4. Install Salem 794-301 3-1/2" gauges with flow indicator - black background with white numbers.
5. Install "AAR load meter 8481324 dial will be "Blank-0-1500".
6. Install Salem 3960-003 air gauge cover assembly.
7. Install push-test warning light assembly No. 8484375 - warning lights:
    a. PCS - Pneumatic Control Switch - 8482357
    b. WS - Wheel Slip 8 8482355
    c. Sand - Sanding - 8482354
    d. Emergency red headlight - 8482358
    e. O.S. - Overspeed - 8484244
8. Install the following new switches:
    a. Sand - latching type - 8315490 and nameplate, 8316398
    b. Lead truck sand - on/off - 8331384 and nameplate, 8490190
    c. Headlight, 8238108 (2), and nameplates 8481199 for front switch and 8481200 for rear switch
    d. Oscitrol light switch, 8238108
    e. Signal light reset switch, 8481167, and filmstrip nameplate, 8481232 (blank out extra two indications)
    f. Oscitrol "stall" switch, Carling HCA20027, and nameplate, 9083844.
    g. Attendant call pushbutton switch , 8481267, and nameplate, 8394197
    h. Ground lights, gauge lights, engine run, control and fuel pump switches, 8481164.

Console (AAR) Controller - Continued

i. Step lights, and generator field switches, 8481166

j. Install filmstrip nameplates, 8481174 (Eng. Run, Gen. Fld., Cont. and Fuel Pump) and 8481196 (GR, Step, Gauge).

k. Auxiliary cab heater, 8298939, with nameplate, 8469858

9. Install transparent switch boards for mounting of film nameplates - 2 each 8274461, 1 each 8481242.

10. Install cover plates, 8488539, to blank unused switch openings.

11. Install gauge light rheostate, 8481573.

12. Install bell operating valve.

13. Install horn operating valve.

14. Install laminated low idle feature instruction placard to upper right area of stand.

15. Install brake valve handle holder on right lower end of stand.

16. Install radio in stand. (See Radio section)

(12) 17. Install brace between control stand and cab front wall per Dwg. _____.

Note: Use switches from EMD or approved equals.

ATS Cab Signal

1. Delete

Radio

1. Install push-to talk, SAB Harmon radio as follows:

   VHF RAdio Model 4S55C - 1339 - 1342 12/72 Volt D. D. operation

   with dispatcher tone option and internal mike/amp/filter

   Dispatcher tone 1 - 2600 HZ

   Dispatcher tone 2 - 2200 HZ

   Channel 1 - 161.190 MHZ

   Channel 2 - 160.920 MHZ

   Channel 3 - 161.460 MHZ

   Channel 4 - 161.280 MHZ

   Channel 5 - 106.950 MHZ

   Install in top of controller.

2. Antenna - Sinclair Radio Labs - Model Excaliber - Part No. 2Z01.

   Note: The 74V power supply plug connector is 90°:

   97-3108-B-18-45 - Socket
   MS-3057-10A - Clamp

   Furnished by:

   Genesis Electronics
   111 East 54th Street
   Indianapolis, Indiana 46220

Speed Indicator/Transition System

1. Install new Barco system including:

   a. TCP panel 50-06780-00 (located in HVC)

   b. Speed Indicator - 50-06755-01 (located in cab)

   c. Axle generator - 50-05272-00)
) (located on end of right
   d. Axle drive flexible connector 50-04433-00) #2 axle)

   e. Junction box - 50-05484-00 (mounted under cab)

   f. Indicator cable - 50-06320-30

   g. Light cable 50-06319-40

Water Cooler

1. Install AJAX 685.

Sanitary (toilet) Facilities

1. Install PPC toilet -12200.
2. Install new paper holder.
3. Install drain pipe. (See Main Frame section)

Fire Extinguisher

1. Apply two (2) 20 lb. ANSUL - one in cab and one in engine room.

Final Test

1. Check for leaks - water, fuel, lube oil and, and air systems.
2. Air cure main generator.
3. Sequence test all circuits.
4. Check all lights.
5. Load test one hour - check shutter opening and setting of temperature switches.
6. Record all pressure, vacuum and temperature readings.
7. Set transition.
8. Make final movement and running checks.
9. Set transition and performance control.

Locomotive Weight

1. Ensure total loaded weight of 261,000 ± 2,000 lbs. - ballast as required.
2. Weigh each unit when completed - furnish total weight ticket and weight on front and rear - adjusted for supplies.

Paint

1. Performance Polymer "Polyac" paint.
2. Delete ACI labels.
3. Modulite number panels, white with black numerals.

Old Road Number	New Road Number
GP30 500/2250 Series GP35 600/2500 Series	2601 - 2674

4. Color code water, fuel, lube oil piping flange - valves.
5. Paint locomotive number on side of cab white.
6. Apply decal "FULLY EQUIPPED FRA PART 223 GLAZING" to cab wall.
7. Stencil on each side of prime mover, "Equipped with E power assemblies and 046 injectors" (applicable to installation of 645 power assemblies).
8. Paint exhaust stacks and heat shields with SP-106 paint from V.H.T. Company.
9. Do not stencil load regulator.

Records

1. Complete Locomotive Data Sheets.
2. Engine REbuild Sheets.
3. MACS Reports.

Test Run - 72 Hour Inspection

1. The finished locomotive will be one of the units in a consist in regular freight service on ICG's main tracks, Paducah to Memphis, Tennessee, and return, with a Quality Inspector on board to monitor operation and settings on unit.
2. Following test run, unit will be given 72 Hour Inspection and:
   a. Take oil sample for laboratory analysis.
   b. Change all fuel and oil filters.
   c. Correct all exceptions noted by Quality Control.

Revision Notations

(1) Page 3 - Item 38 - per RWP file 872-137 - 11/25/80

(2) Page 4 - Item 14 - per RWP file 872-137 - 11/25/80

(3) Page 5 - Item 4 - To specify carrier required for F couplers
2nd paragraph of note - per information received from Chicago
3rd paragraph of note - per information received from Chicago

(4) Page 11 - Item 27 GP30(a) and GP35(a) - per RWP file 872-137 - 11/25/80

(5) Page 16 - Item 5 - Listed dwg. is for axle with 5" dia. bolt pattern for end caps - new dwg. is being processed for 3-7/8" dia. bolt pattern

Item 6 & 7 - per RWL

(6) Pages 31, 32 & 33 - per ALJ

(7) Page 36 - per ALJ

(8) Page 37 - Item 9 per RWP file 872-137 11/25/80 and per EGK

(9) Page 38 - Not required since main generator stator is to be rewound.

(10) Page 39 - Item 1 - per RWP file 872-137 11/25/80
Item 2 - per RWP file 872-137 11/25/80

(11) Page 40 - Note - per RWP file 872-137 11/25/80

(12) Page 45 - Required to prevent vibration.